

Access DB# 107134

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: JOHN MAPLES Examiner #: 62294 Date: 10/30/03
Art Unit: 1745 Phone Number 30 8-1795 Serial Number: 09/432,334
Mail Box and Bldg/Room Location: CPLA2-BE12 Results Format Preferred (circle): PAPER DISK E-MAIL
3

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: ENERGY STORAGE + CONVERSION DEVICES USING THERMAL SPRINGS
Inventors (please provide full names): RONALD GUIDOTTI; HUI YE; TONGSAN XIAO ET AL
ELECTRODES

Earliest Priority Filing Date: 11/2/1998

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

EXS. ACTIVE MATERIAL = FeS_2 , CoS_2 , WS_2 , NiS_2 or MoS_2

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>ED</u>	NA Sequence (#) _____	STN <u>\$ 184.63</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>(3)</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic <u>(and)</u>	Link _____
Date Completed: <u>10-30-03</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>5</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>70</u>	Other _____	Other (specify) _____

Access DB# 107134

SEARCH REQUEST FORM

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3

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: ENERGY STORAGE + CONVERSION DEVICES USING THERMAL SPINCO ELECTRODES
Inventors (please provide full names): RONALD GUIDOTTI; HUI YE; TONGSAN XIAO ET AL

Earliest Priority Filing Date: 11/2/1998

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

A electrode for an energy storage and conversion

device, comprising

a substrate; and

a layer of an active material comprising a metal sulfide, metal selenide, or metal telluride, and having a thickness in the range from about 5 to about 114 microns deposited on the substrate, wherein the layer comprises greater than 95% of the active material.

EXS. ACTIVE MATERIAL = FeS_2 , CoS_2 , WS_2 , NiS_2 or MoS_2

STAFF USE ONLY

Type of Search

Vendors and cost where applicable

=> file reg

FILE 'REGISTRY' ENTERED AT 17:15:05 ON 30 OCT 2003
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FILE 'REGISTRY' ENTERED AT 16:36:47 ON 30 OCT 2003

E IRON DISULFIDE/CN
L1 1 SEA "IRON DISULFIDE"/CN
E COBALT DISULFIDE/CN
L2 1 SEA "COBALT DISULFIDE"/CN
E TUNGSTEN DISULFIDE/CN
L3 1 SEA "TUNGSTEN DISULFIDE"/CN
E NICKEL DISULFIDE/CN
L4 1 SEA "NICKEL DISULFIDE"/CN
E MOLYBDENUM DISULFIDE/CN
L5 1 SEA "MOLYBDENUM DISULFIDE"/CN
L6 3032 SEA (M(L)S)/ELS (L) 2/ELC.SUB
L7 2034 SEA (M(L)SE)/ELS (L) 2/ELC.SUB
L8 2237 SEA (M(L)TE)/ELS (L) 2/ELC.SUB

FILE 'HCA' ENTERED AT 16:41:36 ON 30 OCT 2003

L9 1925 SEA L1
L10 358 SEA L2
L11 1747 SEA L3
L12 345 SEA L4
L13 9913 SEA L5
L14 133738 SEA L6
L15 41505 SEA L7
L16 38851 SEA L8
L17 QUE ELECTROD## OR ANOD## OR CATHOD##
E COATINGS/CV
L18 7701 SEA COATINGS/CV
E COATING MATERIALS/CV
L19 238921 SEA "COATING MATERIALS"/CV
E COATING PROCESS/CV
L20 106832 SEA "COATING PROCESS"/CV
L21 240069 SEA ENERG?(2A) (STORAG? OR STORE# OR STORING# OR CONVERSIO
N? OR CONVERT?) OR FUELCELL? OR FUEL?(2A) (CELL OR CELLS)
OR BATTERY OR BATTERIES OR (ELECTROLY? OR ELECTROCHEM?
OR GALVANI? OR PRIMARY OR SECONDARY OR WET OR DRY) (2A) (CE
LL OR CELLS) OR DRYCELL? OR WETCELL?
L22 14 SEA L9 AND L17 AND (L18 OR L19 OR L20) AND L21
L23 5 SEA L10 AND L17 AND (L18 OR L19 OR L20) AND L21
L24 4 SEA L11 AND L17 AND (L18 OR L19 OR L20) AND L21
L25 2 SEA L12 AND L17 AND (L18 OR L19 OR L20) AND L21
L26 47 SEA L14 AND L17 AND (L18 OR L19 OR L20) AND L21
L27 0 SEA L15 AND L17 AND (L18 OR L19 OR L20) AND L21
L28 518 SEA L15 AND L17 AND L21

L29 FILE 'LCA' ENTERED AT 16:51:18 ON 30 OCT 2003
6310 SEA FILM? OR THINFILM? OR COAT? OR TOPCOAT? OR OVERCOAT?
OR LAYER? OR VENEER? OR CLAD? OR SHEATH? OR CASING# OR
ENCAS? OR ENSHEATH? OR OVERLAY? OR OVERLAID? OR ENVELOP?

L30 FILE 'HCA' ENTERED AT 16:54:38 ON 30 OCT 2003
222 SEA L28 AND L29
L31 89369 SEA L17(2A)L29
L32 78 SEA L30 AND L31
L33 1116 SEA L15(3A)L29
L34 530 SEA L15(3A)L17
L35 47 SEA L32 AND (L33 OR L34)
L36 1 SEA L32 AND L33 AND L34
L37 QUE (ELECTROD## OR CATHOD## OR ANOD##)/TI
L38 22 SEA L35 AND L37
L39 6 SEA L13 AND L17 AND (L18 OR L19 OR L20) AND L21
L40 1 SEA L16 AND L17 AND (L18 OR L19 OR L20) AND L21
L41 186 SEA L16 AND L17 AND L21
L42 87 SEA L41 AND L29
L43 18 SEA L42 AND (L33 OR L34)
L44 3 SEA L43 AND L37
L45 4 SEA L40 OR L44

L46 FILE 'REGISTRY' ENTERED AT 17:05:01 ON 30 OCT 2003
3725 SEA (L6 OR L7 OR L8) AND (T1 OR T2 OR T3)/PG

L47 FILE 'HCA' ENTERED AT 17:06:05 ON 30 OCT 2003
68240 SEA L46
L48 35 SEA L47 AND L17 AND (L18 OR L19 OR L20) AND L21
L49 0 SEA L48 AND (L33 OR L34)
L50 26 SEA L48 AND L37
L51 13 SEA L50 NOT (L22 OR L23 OR L24 OR L25 OR L36 OR L38 OR
L39 OR L45 OR L43)
L52 37 SEA L22 OR L23 OR L24 OR L25 OR L36 OR L39 OR L43 OR L45
L53 19 SEA L38 NOT L52
L54 13 SEA L51 NOT (L52 OR L53)
L55 27 SEA L52 AND (1907-1998/PRY OR 1907-1998/PY)
L56 18 SEA L53 AND (1907-1998/PRY OR 1907-1998/PY)
L57 8 SEA L54 AND (1907-1998/PRY OR 1907-1998/PY)

=> file hca

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=> d l55 1-27 cbib abs hitstr hitind

L55 ANSWER 1 OF 27 HCA COPYRIGHT 2003 ACS on STN

139:103813 **Energy storage and conversion**

devices using thin film oxide and nonoxide **electrodes** prepared by thermal spray. Guidotti, Ronald A.; Ye, Hui; Xiao, Tongsan D.; Reisner, David E.; Doughty, Daniel H. (USA). U.S. Pat. Appl. Publ. US 2003138695 A1 20030724, 13 pp. (English). CODEN: USXXCO. APPLICATION: US 1999-432334 19991102. PRIORITY: US 1998-PV106681 19981102.

AB Thin **electrodes** produced by thermal spray techniques are presented, wherein the thermal spray feedstock comprises an active material and a protective barrier coating. In a particularly advantageous feature, the active material feedstock is a metal sulfide, metal selenide, or metal telluride which ordinarily decomps. at thermal spray temps. or which transforms to a material unsuitable for use as an **electrode** at thermal spray temps. The **electrodes** find particular utility in thermal **batteries**.

IT 1317-33-5, Molybdenum sulfide mos2, uses 12013-10-4
, Cobalt sulfide cos2 12035-51-7, Nickel sulfide nis2
12068-85-8, Iron sulfide fes2 12138-09-9, Tungsten
sulfide (WS2)

(**energy storage and conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)

RN 1317-33-5 HCA

CN Molybdenum sulfide (MoS2) (8CI, 9CI) (CA INDEX NAME)

S=Mo=S

RN 12013-10-4 HCA

CN Cobalt sulfide (CoS2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S=Co=S

RN 12035-51-7 HCA

CN Nickel sulfide (NiS2) (6CI, 8CI, 9CI) (CA INDEX NAME)

S=Ni=S

RN 12068-85-8 HCA

CN Iron sulfide (FeS2) (8CI, 9CI) (CA INDEX NAME)

S=Fe=S

RN 12138-09-9 HCA

CN Tungsten sulfide (WS2) (8CI, 9CI) (CA INDEX NAME)

S=W=S

IC ICM H01M004-58
ICS B05D005-12; B05D001-02
NCL 429221000; 429223000; 429231500; 429218100; 427126100; 427427000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** oxide film **electrode** thermal spray;
energy conversion device oxide film
electrode thermal spray
IT Ball milling
Battery electrodes
Electrodes
Energy converters
Energy storage systems
Films
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)
IT Selenides
Sulfides, uses
Tellurides
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)
IT Coating process
(plasma spraying, d.c. arc; **energy storage**
and **conversion** devices using thin film oxide and
nonoxide **electrodes** prepd. by thermal spray)
IT Coating process
(thermal spraying; **energy storage** and
conversion devices using thin film oxide and nonoxide
electrodes prepd. by thermal spray)
IT Primary batteries
(thermal; **energy storage** and
conversion devices using thin film oxide and nonoxide
electrodes prepd. by thermal spray)
IT 1309-36-0, Pyrite, processes
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)
IT 1317-33-5, Molybdenum sulfide mos2, uses 12013-10-4
, Cobalt sulfide cos2 12035-51-7, Nickel sulfide nis2
12068-85-8, Iron sulfide fes2 12138-09-9, Tungsten
sulfide (WS2)
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)
IT 7704-34-9, Sulfur, uses 7782-49-2, Selenium, uses 13494-80-9,
Tellurium, uses
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)

- L55 ANSWER 2 OF 27 HCA COPYRIGHT 2003 ACS on STN
134:240187 Mixed ionic electronic conductor coatings for redox
electrodes. Visco, Steven J.; Chu, May-Ying (PolypPlus
Battery Company, Inc., USA). (U.S. US 6210832 B1 20010403, 9 pp.
(English). CODEN: USXXAM. APPLICATION: US 1998-145401 19980901.
- AB Disclosed is a redox **electrode** for a **battery**
cell that has a coating to mitigate plugging by pptd. discharge
products. The coating comprises a mixed ionic electronic conductor
(MIEC) which is applied to the surface of a redox **electrode**
. The presence of the MIEC coating allows for rapid removal of
discharge product ppts. from redox **electrodes** since it is
capable of conducting both electrons and ions. As a result, the
chem. action necessary to remove such ppts. may take place on both
the electrolyte side of the ppt. and at the ppt./**electrode**
interface. MIEC coatings in accordance with the present invention
may be composed of any suitable material having ionic cond. for a
metal ion in a neg. **electrode** with which the redox
electrode is to be paired in a **battery** cell, and
reversible redox capacity. Examples include TiS_2 , FeS_2 , and cobalt
oxides.
- IT 12068-85-8, Iron disulfide
(mixed ionic electronic conductor coatings for redox
electrodes)
- RN 12068-85-8 HCA
- CN Iron sulfide (FeS_2) (8CI, 9CI) (CA INDEX NAME)
- $\text{S}=\text{Fe}=\text{S}$
- IC ICM H01M004-02
- NCL 429218100
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST **battery** redox **electrode** mixed ionic electronic
conductor coating
- IT **Battery cathodes**
Coating materials
Secondary **batteries**
(mixed ionic electronic conductor coatings for redox
electrodes)
- IT Alkali metal sulfides
Polysulfides
Sulfides, uses
(mixed ionic electronic conductor coatings for redox
electrodes)
- IT Alkali metal compounds
Alkaline earth compounds
(polysulfides; mixed ionic electronic conductor coatings for
redox **electrodes**)
- IT 7704-34-9, Sulfur, uses 74432-42-1, Lithium polysulfide
(mixed ionic electronic conductor coatings for redox
electrodes)
- IT 7440-44-0, Carbon, uses 11104-61-3, Cobalt oxide 12039-13-3,

Titanium disulfide **12068-85-8**, Iron disulfide
(mixed ionic electronic conductor coatings for redox
electrodes)

L55 ANSWER 3 OF 27 HCA COPYRIGHT 2003 ACS on STN
134:210599 Long cycle-life alkali metal **battery** with
cathode coated with a very thin protective film. Peled,
Emanuel; Golodnitsky, Diana; Strauss, Ela (Ramat University
Authority for Applied Research and Industrial Development L,
Israel). U.S. US 6203947 B1 20010320, 16 pp. (English). CODEN:
USXXAM. APPLICATION: US 1999-280646 19990329. PRIORITY: IL
1998-124007 19980408.

AB The present invention provides a **cathode** for use in a
secondary electrochem. cell, such
cathode being coated with a very thin, protective film,
permeable to ions. The protective film of the **cathode**
usually has a thickness of up to about 0.1 .mu.m and it provides
protection against high voltage charging and overdischarging. The
present invention further provides a **secondary**
electrochem. cell comprising such a
cathode.

IT **12068-85-8**, Iron sulfide FeS_2
(long cycle-life alkali metal **battery** with
cathode coated with very thin protective film)

RN **12068-85-8** HCA

CN Iron sulfide (FeS_2) (8CI, 9CI) (CA INDEX NAME)

S—Fe—S

IC ICM H01M004-58

NCL 429231950

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **battery cathode** protective film coated

IT Alloys, uses

(alkali metal; long cycle-life alkali metal **battery**
with **cathode** coated with very thin protective film)

IT Alkali metals, uses

(alloys; long cycle-life alkali metal **battery** with
cathode coated with very thin protective film)

IT Fluoropolymers, uses

Polycarbonates, uses

Polyoxyalkylenes, uses

(binder; long cycle-life alkali metal **battery** with
cathode coated with very thin protective film)

IT Polyoxyalkylenes, uses

(lithium complex; long cycle-life alkali metal **battery**
with **cathode** coated with very thin protective film)

IT **Battery cathodes**

Coating materials

Polymer electrolytes

- (long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)
- IT Alkali metals, uses
(long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)
- IT 9003-17-2, Polybutadiene 9003-53-6, Polystyrene 24937-79-9, PvdF
25014-41-9, Polyacrylonitrile 25322-68-3, Peo
(binder; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)
- IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 12597-68-1,
Stainless steel, uses
(current collector; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)
- IT 7439-89-6, Iron, uses 7439-95-4, Magnesium, uses 7439-96-5,
Manganese, uses 7440-42-8, Boron, uses 7440-48-4, Cobalt, uses
7440-70-2, Calcium, uses
(dopant; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)
- IT 1309-48-4, Magnesia, uses 1314-23-4, Zirconia, uses 1344-28-1,
Alumina, uses 7631-86-9, Silica, uses 13463-67-7, Titania, uses
(filler; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate
623-53-0, Ethyl methyl carbonate 1309-36-0, Pyrite, uses
1314-62-1, Vanadium pentoxide, uses 7439-93-2, Lithium, uses
7550-35-8, Lithium bromide 7570-02-7, DiVinyl carbonate
10377-51-2, Lithium iodide 10411-26-4, Butyl carbonate
12031-65-1, Lithium nickel oxide LiNiO_2 12039-13-3, Titanium
disulfide 12057-17-9, Lithium manganese oxide LiMn_2O_4
12068-85-8, Iron sulfide FeS_2 12190-79-3, Cobalt lithium
oxide CoLiO_2 14283-07-9, Lithium tetrafluoroborate 21324-40-3,
Lithium hexafluorophosphate 24991-55-7, Polyethylene glycol
dimethyl ether 25322-68-3D, Peo, lithium complex 26098-78-2,
Ethylene oxide-methylmethacrylate copolymer 90076-65-6
329038-54-2, Vanadium oxide (V_2O_5)
(long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)
- IT 7439-93-2D, Lithium, polyethylene oxide complex, uses
(long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)
- IT 33454-82-9, Lithium triflate
(stainless steel coated with; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)
- IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
(stainless steel coated with; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

4-B28

MEMORANDUM
MELLERSON- 571-272-2516

Maples 09/432,334

Page 8

storage or conversion devices. Ye, Hui; Strock, Christopher; Xiao, Tongsan; Strutt, Peter R.; Reisner, David E. (Us Nanocorp, Inc., USA). PCT Int. Appl. WO 9964641 A1 19991216, 19 pp. DESIGNATED STATES: W: CN, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US12899 19990609. **PRIORITY: US** 1998-88777 (19980610).

AB Film **electrodes** are manufd. by coating of an active material feedstock powder (e.g., FeS₂) with an additive material (e.g., S) suitable for preventing thermal decompn. of the feedstock powder during thermal spraying. The coated feedstock is sprayed onto a substrate using a plasma gun, forming a coating on the substrate, thereby providing an **electrode**.
IT 1317-33-5, Molybdenum disulfide, uses 12013-10-4, Cobalt disulfide 12068-85-8, Iron disulfide 12138-09-9, Tungsten sulfide (thermal sprayed film **electrodes** for energy storage or conversion devices)
RN 1317-33-5 HCA
CN Molybdenum sulfide (MoS₂) (8CI, 9CI) (CA INDEX NAME)

S=Mo=S

RN 12013-10-4 HCA
CN Cobalt sulfide (CoS₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S=Co=S

RN 12068-85-8 HCA
CN Iron sulfide (FeS₂) (8CI, 9CI) (CA INDEX NAME)

S=Fe=S

RN 12138-09-9 HCA
CN Tungsten sulfide (WS₂) (8CI, 9CI) (CA INDEX NAME)

S=W=S

IC ICM C23C004-04
ICS C23C004-12; H01M004-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **electrode** manuf thermal spraying
IT **Electrodes** (porous; thermal sprayed film **electrodes** for energy storage or conversion devices)
IT Film **electrodes** (thermal sprayed film **electrodes** for energy storage or conversion devices)

- IT Carbonaceous materials (technological products)
Metals, uses
Oxides (inorganic), uses
Sulfides, uses
(thermal sprayed film **electrodes** for **energy storage or conversion** devices)
- IT **Coating process**
(thermal spraying; thermal sprayed film **electrodes** for **energy storage or conversion** devices)
- IT 7704-34-9, Sulfur, uses 9005-25-8, Starch, uses
(additive; thermal sprayed film **electrodes** for **energy storage or conversion** devices)
- IT 7429-90-5, Aluminum, uses 7440-32-6, Titanium, uses
(substrate; thermal sprayed film **electrodes** for **energy storage or conversion** devices)
- IT 1309-36-0, Pyrite, uses 1313-13-9, Manganese dioxide, uses
1313-99-1, Nickel oxide, uses **1317-33-5**, Molybdenum
disulfide, uses 1344-70-3, Copper oxide 7440-44-0, Carbon, uses
7440-44-0D, Carbon, fluorinated, uses 11104-61-3, Cobalt oxide
11105-02-5, Silver vanadium oxide 11115-78-9, Copper sulfide
11118-57-3, Chromium oxide 11126-12-8, Iron sulfide
12013-10-4, Cobalt disulfide 12039-13-3, Titanium
disulfide 12054-48-7, Nickel hydroxide **12068-85-8**, Iron
disulfide **12138-09-9**, Tungsten sulfide 181183-66-4,
Copper silver vanadium oxide
(thermal sprayed film **electrodes** for **energy storage or conversion** devices)

L55 ANSWER 5 OF 27 HCA COPYRIGHT 2003 ACS on STN

123:98745 Process for **coating** with single source precursors.

Winter, Charles H.; Lewkebandara, T. Suren (Wayne State University, USA). (U.S. US 5425966 A) **19950620**, 7 pp. (English).

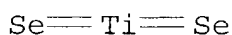
CODEN: USXXAM. APPLICATION: US 1994-329841 19941027.

AB Reaction products of metal halides with org. chalcogenides and dichalcogenides provide single source precursors for metal dichalcogenide **coatings**. The single source precursors are sublimed at reduced pressure and allowed to contact a substrate maintained at an elevated temp. The resulting dichalcogenide **coatings** (for example TiS₂) are smooth, and adherent, and may be used in numerous applications, for example, as **cathodes** for Li **batteries**.

IT **12067-45-7**, Titanium diselenide **12067-75-3**,
Titanium ditelluride
(**film** deposition using single source precursor)

RN 12067-45-7 HCA

CN Titanium selenide (TiSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 12067-75-3 HCA

CN Titanium telluride (TiTe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te—Ti—Te

- IC ICM C23C016-00
 NCL 427255100
 CC 75-1 (Crystallography and Liquid Crystals)
 Section cross-reference(s): 52
 ST Group IVB chalcogenide deposition single precursor; titanium
 chalcogenide **film** deposition single precursor
 IT Group IVB element compounds
 (halo org. chalcogenide complexes; prepn. and use as single
 source precursor for metal dichalcogenide **film**
 deposition)
 IT Vapor deposition processes
 (of metal dichalcogenide **films** using single source
 precursor)
 IT Group IVB element halides
 (reaction with org. chalcogen compds. in prepn. of single source
 precursors for metal dichalcogenide **films**)
 IT 12039-13-3, Titanium disulfide **12067-45-7**, Titanium
 diselenide **12067-75-3**, Titanium ditelluride
 (**film** deposition using single source precursor)
 IT 165327-11-7P 165327-12-8P
 (prepn. and use as single source precursor for metal
 dichalcogenide **film** deposition)
 IT 16893-00-8P 16893-01-9P 16920-83-5P 57965-49-8P
 (prepn. as single source precursor for metal dichalcogenide
film deposition)
 IT 7550-45-0, Titanium tetrachloride, reactions
 (reaction with org. chalcogen compds. in prepn. of single source
 precursors for metal dichalcogenide **films**)
 IT 165327-13-9
 (titanium sulfide **film** deposition using single source
 precursor of)
- L55 ANSWER 6 OF 27 HCA COPYRIGHT 2003 ACS on STN
 122:85495 Secondary alkali metal **battery**. Kozmik, Ivan D.;
 Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Grigortchak, Ivan I.;
 Krigan, Elvria G.; Bahmatyuk, Bogdan P. (I. N. Frantsevich Institute
 for Problems in Materials Science, Ukraine). U.S. US **8368957 A**
19941129, 12 pp. Cont.-in-part of U.S. Ser. No.783,886,
 abandoned. (English). CODEN: USXXAM. APPLICATION: US 1992-968183
 19921029. PRIORITY: US 1991-783886 19911029.
- AB The **battery** with improved capacity contains a Group IA
 element (G) **anode**, an electrolyte capable of ion transport
 of **anode** species, and a **cathode** comprising a
layered cryst. material GxMyXz, where x .ltoreq.10, M is Bi
 and Sb, y = 1 and 2, X is S, Se and Te, and z = 1, 2, and 3. The
layered cryst. material has a sufficiently low defect d. and
 appropriate impurity distribution, together sufficient to permit
 intercalation of .gtoreq.3 mol Li within van der Waals channels/mol

of said material without significant distortion of the lattice. The change in Gibbs free energy of this material is substantially independent of the intercalated Li concn.

IT 1304-82-1P, Bismuth telluride 12068-69-8P, Bismuth selenide

(**battery cathodes** from lithium-intercalatable)

RN 1304-82-1 HCA

CN Bismuth telluride (Bi_2Te_3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 12068-69-8 HCA

CN Bismuth selenide (Bi_2Se_3) (6CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Se	3	7782-49-2
Bi	2	7440-69-9

IC ICM H01M004-58

NCL 429194000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST alkali metal secondary **battery**; lithium intercalatable chalcogenide **battery cathode**

IT **Batteries**, secondary
(alkali metal)

IT **Cathodes**

(**battery**, from lithium-intercalatable antimony or bismuth chalcogenides)

IT 7439-93-2P, Lithium, uses

(**battery cathodes** from antimony or bismuth chalcogenides intercalated with)

IT 1304-82-1P, Bismuth telluride 1345-07-9P, Bismuth sulfide 12068-69-8P, Bismuth selenide

(**battery cathodes** from lithium-intercalatable)

IT 7440-36-0D, Antimony, chalcogenides

(**battery cathodes** from lithium-intercalatable)

IT 1304-76-3, Bismuth oxide, uses 1317-38-0, Copper oxide (CuO), uses
(**battery cathodes** from lithium-intercalatable chalcogenides contg.)

L55 ANSWER 7 OF 27 HCA COPYRIGHT 2003 ACS on STN

120:81559 Stacked cell array bipolar **battery** with thermal sprayed container and cell seal. Williams, Mark T.; Briscoe, James D.; Oweis, Salah M. (Saft America Inc., USA). U.S. US 5254415 A 19931019, 11 pp. (English). CODEN: USXXAM. APPLICATION: US 1992-865471 19920409.

AB A Li alloy/metal sulfide **battery** comprises a stacked array of cells spray coated with a ceramic coating followed by a metallic containment structural coating (e.g., from stainless steel SUS410)

to maintain the structural integrity of the array during high-temp. use. The ceramic layer preferably comprises Li_2S , CaS , SrS , BaS , Li_2O , BeO , MgO , CaO , SrO , Ba_2O , Li_3N , Be_3N_2 , Mg_3N_2 , Ca_3N_2 , Sr_3N_2 , Si_3N_4 , BN , AlN , and their mixts.

IT 12013-10-4, Cobalt sulfide (CoS_2) 12035-51-7,
Nickel sulfide (NiS_2) 12068-85-8, Iron sulfide (FeS_2)
(**cathode**, in stacked cell array bipolar **battery**
with thermal sprayed container and cell seal)
RN 12013-10-4 HCA
CN Cobalt sulfide (CoS_2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S==Co==S

RN 12035-51-7 HCA
CN Nickel sulfide (NiS_2) (6CI, 8CI, 9CI) (CA INDEX NAME)

S==Ni==S

RN 12068-85-8 HCA
CN Iron sulfide (FeS_2) (8CI, 9CI) (CA INDEX NAME)

S==Fe==S

IC ICM H01M006-46
ICS H01M002-08; H01M010-18; H01M004-36
NCL 429153000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** stacked ceramic coating; magnesia coating stacked
battery
IT **Coating materials**
(ceramics, in stacked cell array bipolar **battery** with
thermal sprayed container and cell seal)
IT Ceramic materials and wares
(coating, in stacked cell array bipolar **battery** with
thermal sprayed container and cell seal)
IT **Batteries**, primary
(stacked, lithium alloy-metal sulfide, with ceramic coating, for
high-temp. use)
IT 72785-69-4
(**anode**, in stacked cell array bipolar **battery**
with thermal sprayed container and cell seal)
IT 1314-62-1, Vanadium oxide (V_2O_5), uses 1317-42-6, Cobalt sulfide
 CoS) 12013-10-4, Cobalt sulfide (CoS_2) 12031-65-1,
Lithium nickel oxide (LiNiO_2) 12035-51-7, Nickel sulfide
(NiS_2) 12039-13-3, Titanium sulfide (TiS_2) 12068-85-8,
Iron sulfide (FeS_2) 12190-79-3, Cobalt lithium oxide (LiCoO_2)
13463-67-7, Titania, uses 16812-54-7, Nickel sulfide (NiS)
(**cathode**, in stacked cell array bipolar **battery**
with thermal sprayed container and cell seal)

IT 1304-54-7, Beryllium nitride (Be_3N_2) 1304-56-9, Beryllium oxide (BeO) 1305-78-8, Calcia, uses 1309-48-4, Magnesia, uses 1314-11-0, Strontium oxide (SrO), uses 1314-96-1, Strontium sulfide (SrS) 7439-98-7, Molybdenum, uses 10043-11-5, Boron nitride (BN), uses 12013-82-0, Calcium nitride (Ca_3N_2) 12033-82-8, Strontium nitride (Sr_3N_2) 12033-89-5, Silicon nitride, uses 12057-24-8, Lithium oxide (Li_2O), uses 12057-71-5, Magnesium nitride (Mg_3N_2) 12136-58-2, Lithium sulfide (Li_2S) 12231-50-4, Barium oxide (BaO) 12611-79-9, SUS410 20548-54-3, Calcium sulfide (CaS) 21109-95-5, Barium sulfide (BaS) 24304-00-5, Aluminum nitride (AlN) 26134-62-3, Lithium nitride (Li_3N)
(coating, in stacked cell array bipolar **battery** with thermal sprayed container and cell seal)

L55 ANSWER 8 OF 27 HCA COPYRIGHT 2003 ACS on STN
111:60991 Photochargeable **battery**. Takada, Kazunori; Kanbara, Teruhisa; Tonomura, Tadashi; Kondo, Shigeo (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01007480 A2 19890111 Heisei, 6 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1987-162780 19870630.

AB The title **battery** has a solid electrolyte, a photoconductive **electrode coated** with a material which can electrochem. insert or exclude a mobile metal ion of the electrolyte, and a counterelectrode contg. that metal or ion. The photoconductive **electrode** can be an n- or p-type org. or inorg. semiconductor. When the mobile ion is Cu ion, the **coating** material can be Chevrel-type $\text{Cu}_x\text{Mo}_6\text{S}_8-y$ ($x \leq 0.8$, $y \leq 0.5$), the electrolyte can be $\text{RbCu}_4\text{I}_{2-z}\text{Cl}_{3+z}$ ($0.5 \leq z \leq 1$), and the counterelectrode can be Cu or the above $\text{Cu}_x\text{Mo}_6\text{S}_8-y$; when the mobile ion is Ag, the **coating** material can be Chevrel-type $\text{Ag}_a\text{Mo}_6\text{S}_8-b$ ($a \leq 0.8$, $b \leq 0.5$), the electrolyte can be $\text{RbAg}_4\text{I}_{2-z}\text{Cl}_{3+z}$, and the counterelectrode can be Ag of $\text{Ag}_a\text{Mo}_6\text{S}_8-b$. Thus, a **battery** using a $\text{Cu}_2\text{Mo}_6\text{S}_8$ -**coated** ITO **electrode**, a $\text{RbCu}_4\text{I}_{1.5}\text{Cl}_{3.5}$ electrolyte, and a Cu_2S counterelectrode had a higher capacity than a **battery** using a Au-**coated** ITO **electrode**.

IT 1306-25-8, Cadmium telluride (CdTe), uses and miscellaneous 12058-18-3, Molybdenum selenide (MoSe_2) 12067-46-8, Tungsten diselenide
(**electrodes** from Chevrel-type compd.-**coated**, photoconductive n-type, for photochargeable **batteries**)

RN 1306-25-8 HCA

CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

$\text{Cd}=\text{Te}$

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe_2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Mo==Se

RN 12067-46-8 HCA
CN Tungsten selenide (WSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==W==Se

IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** photochargeable photoconductive **electrode**
coating; ITO **electrode** copper molybdenum sulfide
IT **Electrodes**
(**battery**, semiconductor, Chevrel-type compd.-
coated)
IT 1303-00-0, Gallium arsenide (GaAs), uses and miscellaneous
1306-23-6, Cadmium sulfide (CdS), uses and miscellaneous
1306-24-7, Cadmium selenide (CdSe), uses and miscellaneous
1306-25-8, Cadmium telluride (CdTe), uses and miscellaneous
1317-33-5, Molybdenum disulfide, uses and miscellaneous 7440-21-3,
Silicon, uses and miscellaneous 12018-95-0, Copper indium selenide
(CuInSe₂) **12058-18-3**, Molybdenum selenide (MoSe₂)
12063-98-8, Gallium phosphide (GaP), uses and miscellaneous
12064-03-8, Gallium antimonide (GaSb) **12067-46-8**, Tungsten
diselenide 22398-80-7, Indium phosphide (InP), uses and
miscellaneous 37382-15-3, Aluminum gallium arsenide ((Al,Ga)As)
121857-55-4, Indium silver sulfide (InAg₀-1S₂) 121857-78-1, Copper
indium selenide (Cu₀-1InSe₂) 121857-79-2, Copper indium selenide
(Cu₃-1InS₂)
(**electrodes** from Chevrel-type compd.-coated,
photoconductive n-type, for photochargeable **batteries**)
IT 7681-65-4, Copper iodide (CuI) 7758-89-6, Copper chloride (CuCl)
7783-90-6, Silver chloride (AgCl), uses and miscellaneous
7783-96-2, Silver iodide (AgI) 7785-23-1, Silver bromide (AgBr)
7787-70-4, Copper bromide (CuBr) 121857-74-7, Copper sulfide
(Cu₁-2S) 121918-00-1, Silver sulfide (Ag₁-2S)
(**electrodes** from Chevrel-type compd.-coated,
photoconductive p-type, for photochargeable **batteries**)
IT 51912-50-6, Copper molybdenum sulfide (CuMo₃S₄) 120922-23-8,
Molybdenum silver sulfide (Mo₃AgS₄) 121857-76-9, Molybdenum silver
sulfide (Mo₆Ag₀-8S_{7.5}-8) 121857-77-0, Copper molybdenum sulfide
(Cu₀-8Mo₆S_{7.5}-8)
(**electrodes** from semiconductors coated with
Chevrel-type, photoconductive, for photochargeable
batteries)
IT 22205-45-4, Copper sulfide (Cu₂S)
(**electrodes**, for photochargeable **batteries**)
IT 73379-32-5, Copper rubidium chloride iodide (Cu₄RbCl_{3.5}I_{1.5})
121857-75-8, Rubidium silver chloride iodide (RbAg₄Cl_{3.5}-4I₁-1.5)
(electrolyte, for photochargeable **batteries**)

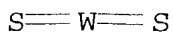
- L55 ANSWER 9 OF 27 HCA COPYRIGHT 2003 ACS on STN
109:233267 Low temperature chemical preparation of semiconducting transition metal chalcogenide films for **energy conversion** and **storage**, lubrication and surface protection. Chatzitheodorou, G.; Fiechter, S.; Kunst, M.; Luck, J.; Tributsch, H. (Hahn-Meitner-Inst., Berlin, Fed. Rep. Ger.). Materials Research Bulletin, 23(9), 1261-71 (English) 1988
. CODEN: MRBUAC. ISSN: 0025-5408.
- AB A technique is presented for the prodn. of films of transition-metal disulfides, such as MoS₂, WS₂, FeS₂, and RuS₂, by the reaction of transition metal carbonyls (e.g., Mo(CO)₆, W(CO)₆, Fe(CO)₅, Ru₃(CO)₁₂) with a S source (e.g., S, H₂S) in an org. solvent (e.g., C₆H₆, PhMe, xylene, mesitylene (1,3,5-trimethylbenzene)) at 80-165.degree.. The quality of the materials and films was studied. Some applications are discussed: as photoactive materials (e.g., MoS₂, WS₂, FeS₂), as lubricating films (MoS₂), as **electrodes** for Li **batteries** (MoS₂, FeS₂), and in corrosion protection (RuS₂).
- IT 12068-85-8, Iron disulfide
(deposition of film of, by reaction of iron carbonyl and sulfur and hydrogen sulfide and thiourea)
- RN 12068-85-8 HCA
CN Iron sulfide (FeS₂) (8CI, 9CI) (CA INDEX NAME)



- IT 1317-33-5P, Molybdenum disulfide, preparation
(deposition of film of, by reaction of molybdenum carbonyl and sulfur)
- RN 1317-33-5 HCA
CN Molybdenum sulfide (NAME)



- IT 12138-09-9, Tungsten
(deposition of sulfur) ten carbonyl and
- RN 12138-09-9 HCA
CN Tungsten sulfide (ME)
- Overse*



- CC 47-10 (Apparatus
IT **Batteries**, primary
(lithium-transition-metal
transition-metal
IT **Coating materials**
(anticorrosive, ruthenium sulfide, prepn. of, by reaction of

- IT ruthenium carbonyl and sulfur)
12068-85-8, Iron disulfide
(deposition of film of, by reaction of iron carbonyl and sulfur and hydrogen sulfide and thiourea)
IT 1317-33-5P, Molybdenum disulfide, preparation
(deposition of film of, by reaction of molybdenum carbonyl and sulfur)
IT 12138-09-9, Tungsten disulfide
(deposition of film of, by reaction of tungsten carbonyl and sulfur)

L55 ANSWER 10 OF 27 HCA COPYRIGHT 2003 ACS on STN
108:153728 **Cathodes** for photochargeable solid-state
battery. Kanbara, Teruhisa; Tonomura, Tadashi; Kondo,
Shigeo (Dodensei Muki Kagobutsu Gijutsu Kenkyu Kumiai, Japan). Jpn.
Kokai Tokyo Koho JP 63004558 A2 19880109 Showa, 5
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-148780 19860625.

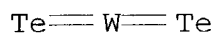
AB The photochargeable **battery** consists of a Cu-based
anode, a Cu+-conducting electrolyte, and an n-type WX2
cathode. Thus, a **cathode layer** of a 2:3
mixt. of WSe2-RbCu4I1.5Cl3.5 electrolyte (I); an electrolyte
layer; and an **anode layer** of a 4:19:5
mixt. of Cu powder, Cu1.59S, and I were pressed together to form a
pellet, which was attached with a In-Sn oxide-coated glass
plate **cathode** collector and a carbon fiber-SBR
anode collector to form a **battery** having better
charging-discharging performance at 60.degree. than a
battery using a ZrS2-contg. **cathode**.

- IT 12067-46-8 12067-76-4
(**cathodes**, for photochargeable solid-state copper
battery)

RN 12067-46-8 HCA
CN Tungsten selenide (WSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 12067-76-4 HCA
CN Tungsten telluride (WTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



- IC ICM H01M004-58
ICS H01L031-04; H01M004-02; H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST tungsten selenide photochargeable **battery cathode**
IT **Batteries**, secondary
(copper/tungsten chalcogenide, solid-state, photochargeable)
IT **Cathodes**
(**battery**, tungsten chalcogenide, photochargeable)
IT 12067-46-8 12067-76-4 12138-09-9

(**cathodes**, for photochargeable solid-state copper
battery)

L55 ANSWER 11 OF 27 HCA COPYRIGHT 2003 ACS on STN

108:153727, Photochargeable secondary solid-state **battery**.

Kanbara, Teruhisa; Tonomura, Tadashi; Kondo, Shigeo (Dodensei Muki Kagobutsu Gijutsu Kenkyu Kumiai, Japan). Jpn. Kokai Tokkyo Koho JP 63004557 A2 19880109 Showa, 5 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-148779 19860625.

AB The photochargeable **battery** consists of a Cu-based **anode**, a Cu+-conducting solid electrolyte, and a **cathode** mainly consisting of n-type MoX₂ (X = S, Se, or Te), and is charged by illuminating the **cathode**. Thus, a **battery** was prepd. by pressing a **cathode layer** of a 2:3 (wt.) MoSe₂-RbCu₄I_{1.5}Cl_{3.5} (I, electrolyte) mixt., an electrolyte **layer**; and an **anode layer** of a 4:19:5 (wt.) Cu powder-Cu_{1.5}S-I mixt. to form a pellet; and connecting a **cathode** collector of an In-Sn oxide-coated glass and an **anode** collector of a carbon-SBR composite to the resp. **electrodes**. When cycled at 60.degree. by 1-h discharging at 100-.mu.A and 1-h charging by illuminating the **cathode** with a 100-W Xe lamp from a 50-cm distance, this **battery** had better performance than a **battery** using a ZrS₂ **cathode**.

IT 12058-18-3 12058-20-7

(**cathodes**, for photo-chargeable solid-state
batteries)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Mo==Se

RN 12058-20-7 HCA

CN Molybdenum telluride (MoTe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te==Mo==Te

IC ICM H01M004-58

ICS H01L031-04; H01M004-02; H01M010-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST molybdenum selenide photochargeable **battery**

cathode

IT **Cathodes**

(**battery**, molybdenum chalcogenide, photochargeable)

IT 7440-05-3, Palladium, uses and miscellaneous 7440-06-4, Platinum, uses and miscellaneous

(**cathodes** contg., molybdenum chalcogenide, for
photochargeable solid-state **battery**)

IT 1317-33-5, uses and miscellaneous 12058-18-3

12058-20-7

(**cathodes**, for photo-chargeable solid-state
batteries)

L55 ANSWER 12 OF 27 HCA COPYRIGHT 2003 ACS on STN

108:153645 Solar-powered secondary **batteries**. Kanbara,
Teruhisa; Tonomura, Tadashi (Dodensei Muki Kagobutsu Gijutsu Kenkyu
Kumiai, Japan). Jpn. Kokai Tokkyo Koho JP 62259359 A2
19871111 Showa, 4 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1986-102343 19860502.

AB The title **batteries** have a Cu **anode**, a
Cu+-conducting solid electrolyte, and n-type ZrX₂ (X = Se, Te)
cathode. Thus, **layers** of 60 mg 2:3 (wt.)
ZrSe₂-RbCu₄I_{1.5}Cl_{3.5} (I) mixt., 50 mg I; and 50 mg 4:19:5 (wt.)
mixt. of Cu, Cu_{1.5}S, and I were pressed to form a **battery**
with the **cathode** covered by a glass plate having an In-Sn
oxide transparent **layer**. The **electrodes** are
connected by a diode to prevent reverse current during charging.
When charged by a 100-W Xe lamp from a 50-cm distance and discharged
at 100 .mu.A, it showed less output-voltage decrease than a
battery using a ZrS₂ **cathode**.

IT 113671-81-1 113671-82-2
(n-type **cathodes**, for solar-charged solid-state copper
batteries)

RN 113671-81-1 HCA

CN Zirconium selenide (ZrSe_{1.8-2.1}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
Se	1.8 - 2.1	7782-49-2
Zr	1	7440-67-7

RN 113671-82-2 HCA

CN Zirconium telluride (ZrTe_{1.8-2.1}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
Te	1.8 - 2.1	13494-80-9
Zr	1	7440-67-7

IC ICM H01M010-46

ICS H01L031-04; H01M004-58; H01M010-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST solar charged secondary **battery**; zirconium selenide
battery cathode

IT **Cathodes**

(**battery**, solar-charged, n-type zirconium selenide or
telluride)

IT 113671-81-1 113671-82-2

(n-type **cathodes**, for solar-charged solid-state copper
batteries)

L55 ANSWER 13 OF 27 HCA COPYRIGHT 2003 ACS on STN

106:159511 Lithium **electrochemical cells** at low

voltage: decomposition of molybdenum and tungsten dichalcogenides. Selwyn, L. S.; McKinnon, W. R.; Von Sacken, U.; Jones, C. A. (Div. Chem., Natl. Res. Counc. Canada, Ottawa, ON, K1A 0R9, Can.). Solid State Ionics, 22(4), 337-44 (English) 1987. CODEN: SSIOD3. ISSN: 0167-2738.

AB Results are given for low voltage discharges of Li

electrochem. cells contg. **layered**

dichalcogenides of Mo and W. The reversible intercalation of Li at high voltages occurs only for phases with octahedrally coordinated metal atoms, but all phases decomp. irreversibly at low voltages to a mixt. of Mo or W and Li₂X, where X is S, Se, or Te. Li can be removed electrochem. from these mixts. at a voltage that correlates with the free energies of formation of Li₂X.

IT 12058-18-3, Molybdenum diselenide 12058-20-7,
Molybdenum ditelluride 12067-46-8, Tungsten diselenide
57620-27-6

(**cathodes**, in lithium **batteries**,
intercalation in relation to)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Mo==Se

RN 12058-20-7 HCA

CN Molybdenum telluride (MoTe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te==Mo==Te

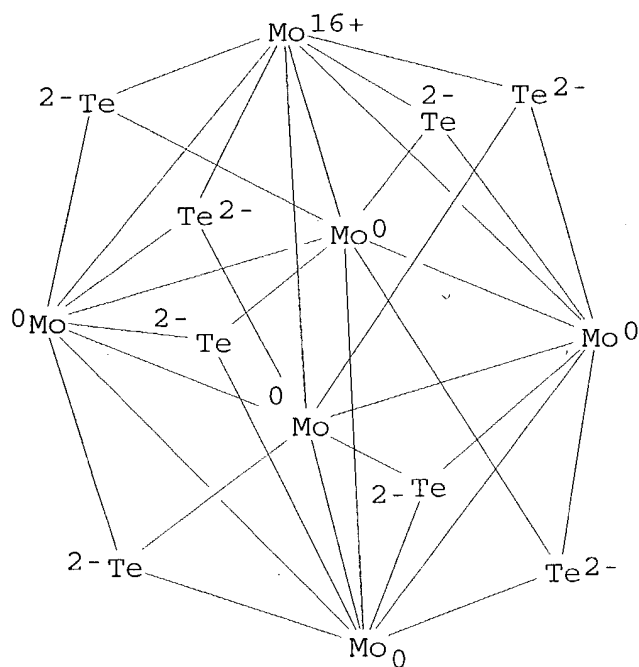
RN 12067-46-8 HCA

CN Tungsten selenide (WSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==W==Se

RN 57620-27-6 HCA

CN Molybdenum, octa-.mu.3-telluroxohexa-, octahedro (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium intercalation tungsten molybdenum chalcogenide;
 cathode tungsten molybdenum chalcogenide lithium
 IT **Cathodes**

(**battery**, dichalcogenides of molybdenum or tungsten,
 with lithium **anodes**)

IT 7439-93-2, Lithium, uses and miscellaneous
 (**anodes**, in **batteries** with dichalcogenides of
 molybdenum or tungsten as **cathodes**)

IT 1317-33-5, Molybdenum disulfide, uses and miscellaneous
 12058-18-3, Molybdenum diselenide 12058-20-7,
 Molybdenum ditelluride 12067-46-8, Tungsten diselenide
 12138-09-9, Tungsten disulfide 57620-25-4, Molybdenum sulfide
 (Mo6S8) 57620-27-6

(**cathodes**, in lithium **batteries**,
 intercalation in relation to)

L55 ANSWER 14 OF 27 HCA COPYRIGHT 2003 ACS on STN

104:171377 Rechargeable solid **electrolyte cells** with
 a copper ion conductor, $\text{Rb}_4\text{Cu}_{16}\text{I}_7\text{-xCl}_{13+\text{x}}$. Kanno, Ryoji; Takeda,
 Yasuo; Oda, Yasuhiro; Ikeda, Hiroyuki; Yamamoto, Osamu (Fac. Eng.,
 Mie Univ., Tsu, 514, Japan). 'Solid State Ionics', 18-19(2), 1068-72
 (English) 1986. CODEN: SSIOD3. ISSN: 0167-2738.

AB A high performance secondary solid electrolyte **battery**
 with a high Cu ion conductor, $\text{Rb}_4\text{Cu}_{16}\text{I}_{6.8}\text{Cl}_{13.2}$, was developed. The
 cell using Cu-Chevrel phase $\text{Cu}_4\text{Mo}_6\text{S}_8$ as an **anode** and a
layered Cu intercalation compd. NbS_2 as a **cathode**,
 had a high discharge capacity and good rechargeability. At a c.d.

of 150 $\mu\text{A}/\text{cm}^2$, the **cathode** capacity was 60 mA-h/g (0.3 electron/NbS₂) and at 750 $\mu\text{A}/\text{cm}^2$ it was 48 mA-h/g (0.24 electron/NbS₂). On the charge-discharge cycle test of 75 $\mu\text{A}/\text{cm}^2$ and 0.3% electron/NbS₂ depth, the cell did not show a significant deterioration in the charge-discharge curves during .gtoreq.500 cycles.

IT 12034-77-4 12034-83-2 12039-55-3
12058-18-3 12058-20-7 12067-45-7
12067-66-2 12067-76-4

(cathodes, battery, with copper rubidium
chloride iodide electrolyte, performance of)

RN 12034-77-4 HCA
CN Niobium selenide (NbSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Nb==Se

RN 12034-83-2 HCA
CN Niobium telluride (NbTe₂) (7CI, 8CI, 9CI) (CA INDEX NAME)

Te==Nb==Te

RN 12039-55-3 HCA
CN Tantalum selenide (TaSe₂) (7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Ta==Se

RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Mo==Se

RN 12058-20-7 HCA
CN Molybdenum telluride (MoTe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te==Mo==Te

RN 12067-45-7 HCA
CN Titanium selenide (TiSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Ti==Se

RN 12067-66-2 HCA
CN Tantalum telluride (TaTe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te==Ta==Te

RN 12067-76-4 HCA
 CN Tungsten telluride (WTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te==W==Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 72

ST **battery** solid electrolyte copper conductor

IT **Batteries**, secondary
 (copper molybdenum sulfide-metal chalcogenide, with copper
 rubidium chloride iodide electrolyte, performance of)

IT 58051-93-7
 (anodes, **battery**, with copper rubidium
 chloride iodide electrolyte, performance of)

IT 1317-33-5, uses and miscellaneous **12034-77-4**
12034-83-2 12039-13-3 12039-15-5 **12039-55-3**
12058-18-3 **12058-20-7** **12067-45-7**
12067-66-2 **12067-76-4** 12138-09-9 12143-72-5
 12164-84-0 12166-28-8 39290-91-0 42821-47-6 42821-48-7
 52226-00-3

(cathodes, **battery**, with copper rubidium
 chloride iodide electrolyte, performance of)
 IT 56188-83-1D, solid solns. with copper rubidium chloride
 63310-92-9D, solid solns. with copper rubidium iodide
 (electrolytes, copper molybdenum sulfide-niobium sulfide
battery, performance of)

L55 ANSWER 15 OF 27 HCA COPYRIGHT 2003 ACS on STN

102:223362 Progress in the SERI-DOE photoelectrochemical cell program.
 Wallace, William (Sol. Energy Res. Inst., Golden, CO, 80401, USA).
 Conference Record of the IEEE Photovoltaic Specialists Conference,
 16th, 1066-71 (English) **1982**. CODEN: CRCNDP. ISSN:
 0160-8371.

AB The concept of photoelectrochem. storage was investigated and
 demonstrated in studies involving 3-**electrode** in-situ and
 4-**electrode** redox storage cells. For these cells system
 efficiencies of 1-3% were obtained to date for the net conversion of
 light to elec. energy. SERI also monitors the tech. progress in the
 Texas Instruments solar energy system program which involves
 conversion of light into elec. and thermal energy in a system which
 incorporates electrochem. storage. Research on polycryst. thin-
film n-CdSe and n-CdSexTel-x based photoelectrochem. cells
 resulted in achievement of .ltoreq.7% efficiencies for the direct
 conversion of light into elec. **energy** without
storage in devices contg. a sulfide/polysulfide electrolyte.
 Higher efficiencies are possible with improved polycryst. thin
films and alternate electrolytes.

IT **1306-25-8D**, solid solns. with cadmium selenide
 (electrodes, photoelectrochem. cells based on thin-
film cadmium selenide and, progress in)

RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

IT 1306-24-7, uses and miscellaneous
(**electrodes**, photoelectrochem. cells based on thin-
film cadmium selenide telluride and, progress in)

RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST cadmium selenide telluride photoelectrochem cell; photoelectrochem
cell development; redox photoelectrochem cell development; solar
energy conversion storage

IT **Energy**
(solar, **conversion** and storage of, progress in)

IT 1306-24-7D, solid solns. with cadmium telluride **1306-25-8D**
, solid solns. with cadmium selenide

(**electrodes**, photoelectrochem. cells based on thin-
film cadmium selenide and, progress in)

IT 1306-24-7, uses and miscellaneous
(**electrodes**, photoelectrochem. cells based on thin-
film cadmium selenide telluride and, progress in)

L55 ANSWER 16 OF 27 HCA COPYRIGHT 2003 ACS on STN

102:206554 Applications of electrogenerated conducting polymers in
electrochemical photovoltaic **cells**. Noufi, Rommel
(Sol. Electr. Convers. Res. Div., Sol. Energy Res. Inst., Golden,
CO, 80401, USA). Conference Record of the IEEE Photovoltaic
Specialists Conference, 16th, 1293-8 (English) **1982**.
CODEN: CRCNDP. ISSN: 0160-8371.

AB The electrochem. generated conducting polypyrrole PP [30604-81-0]
films protect n-type semiconductor photoelectrodes from
degrdn. while permitting electron exchange between the semiconductor
and the electrolyte. The performance characteristics and stability
of PP-covered GaAs, Si, CdTe, CdSe, and CdS photoelectrodes are
discussed.

IT 1306-24-7, uses and miscellaneous **1306-25-8**, uses
and miscellaneous
(**electrodes** from polypyrrole-coated,
photoelectrochem., performance and stability of)

RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72

ST polypyrrole **coating** photoelectrochem **electrode**;
silicon polypyrrole photoelectrochem **electrode**; sulfide
cadmium polypyrrole photoelectrochem **electrode**; selenide
cadmium polypyrrole photoelectrochem **electrode**; gallium
arsenide polypyrrole photoelectrochem **electrode**; cadmium
telluride polypyrrole photoelectrochem **electrode**

IT **Electrodes**
(photoelectrochem., polypyrrole-coated, performance and
stability of)

IT 30604-81-0
(**electrodes coated** with, photoelectrochem.,
performance and stability of)

IT 1303-00-0, uses and miscellaneous 1306-23-6, uses and
miscellaneous 1306-24-7, uses and miscellaneous
1306-25-8, uses and miscellaneous 7440-21-3, uses and
miscellaneous
(**electrodes** from polypyrrole-coated,
photoelectrochem., performance and stability of)

L55 ANSWER 17 OF 27 HCA COPYRIGHT 2003 ACS on STN

102:206541 II-VI thin **film electrochemical**
photovoltaic **cells**. Russak, Michael A.; Reichman, Joseph
(Res. Dev. Cent., Grumman Aerosp. Corp., Bethpage, NY, 11714, USA).
Conference Record of the IEEE Photovoltaic Specialists Conference,
16th, 1057-61 (English) 1982. CODEN: CRCNDP. ISSN:
0160-8371.

AB Group 12-16(IIB-VIA) compd. thin **film** and thin-
film heterostructure **electrodes** for use in
photoelectrochem. cells were produced from their constituent
elements using a 3-source vacuum-evapn. system. CdSe **films**
with a wide variation in electronic properties were produced,
characterized, and evaluated with efficiencies of .ltoreq.6.5% being
recorded for **films** <2.0.mu. thick. ZnSe/CdSe
heterostructure produced in situ yielded cells with open-circuit
voltages >0.6 V and efficiencies >5.5%. Simultaneous elemental
evapn. was also used to make CdSe_{1-x}Tex (x = 0.05-0.40) thin
films, which had efficiencies of .ltoreq.7%. Also, the use
of an aq. ferro-ferricyanide electrolyte resulted in efficiencies
>7% for CdSe thin **films** and .apprx.15% for CdSe
single-crystal **electrodes**.

IT 1315-09-9P
(**electrodes** from cadmium selenide covered with,
photoelectrochem., prepn. and properties of)

RN 1315-09-9 HCA

CN Zinc selenide (ZnSe) (9CI) (CA INDEX NAME)

Se==Zn

IT 1306-24-7P, uses and miscellaneous 1306-25-8DP,
solid solns. with cadmium selenide
(**electrodes**, photoelectrochem., prepn. and properties
of)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd==Se

RN 1306-25-8 HCA

CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd==Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST cadmium selenide photoelectrochem **electrode**; zinc selenide
photoelectrochem **electrode**; telluride selenide cadmium
photoelectrochem **electrode**; ferrocyanide selenide
photoelectrochem cell

IT Photoelectric devices, solar
(photoelectrochem., Group 12-16 (IIB-VIA) compd. thin-
film)

IT 1315-09-9P
(**electrodes** from cadmium selenide covered with,
photoelectrochem., prepn. and properties of)

IT 1306-24-7DP, solid solns. with cadmium telluride 1306-24-7P
, uses and miscellaneous 1306-25-8DP, solid solns. with
cadmium selenide
(**electrodes**, photoelectrochem., prepn. and properties
of)

L55 ANSWER 18 OF 27 HCA COPYRIGHT 2003 ACS on STN

100:37151 Photoelectrochemical **electrodes**. Williams, Roger
M.; Rembaum, Alan (United States National Aeronautics and Space
Administration, USA). U. S. Pat. Appl. US 376306 A0
19830930, 29 pp. Avail. NTIS Order No. PAT-APPL-6-376 306.
(English). CODEN: XAXXAV. APPLICATION: US 1982-376306 19820510.

AB The surface of a moderate band-gap semiconductor such as p-type MoS₂
is modified to contain an adherent **film** of
charge-mediating ionene polymer contg. an electroactive unit such as
bipyridinium. Electron transport between the **electrode**
and the mediator **film** is favorable and photocorrosion and
recombination processes are suppressed. Incorporation of particles
of catalyst such as Pt within the **film** provides a redn. in
overvoltage. The polymer **film** is readily deposited on the

electrode surface and can be rendered stable by ionic or addn. crosslinking. Catalyst can be predispersed in the polymer **film** or a salt can be impregnated into the **film** and reduced there. Thus natural p-MoS₂ crystals showed greatly enhanced visible light to chem. **energy conversion** efficiency following modification with a **film** composed of a charge-mediating polymer (crosslinked 4,4'-bipyridyl-chloromethylstyrene copolymer [88379-78-6]) and catalyst (Pt). Onset of dark currents for H₂ synthesis indicated that the dark overpotential is reduced to .apprx.100 mV. Photoelectrochem. **energy conversion** efficiency was increased from .apprx.0 to 3.9% on modifying MoS₂ surface with 2.5 mg polymer/cm² and 0.25 mg Pt/cm².

IT 12058-18-3

(**electrodes**, coated with polymer contg. dispersed platinum, photoelectrochem.-cell)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=Mo=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38, 72

ST photoelectrochem cell **electrode** molybdenum sulfide; bipyridyl chloromethylstyrene polymer **electrode** photoelectrochem; platinum bipyridyl chloromethylstyrene polymer **electrode**; hydrogen manuf photoelectrochem cell

IT **Electrodes**

(photoelectrochem., molybdenum chalcogenide, coated with ionic polymer contg. dispersed catalyst)

IT 88379-78-6

(crosslinked, **electrodes** from semiconductor coated with layer of catalysts-contg., photoelectrochem.-cell)

IT 7440-06-4, uses and miscellaneous

(**electrodes** from semiconductor coated with polymer contg. dispersed, photoelectrochem.-cell)

IT 1317-33-5, uses and miscellaneous 12058-18-3

(**electrodes**, coated with polymer contg. dispersed platinum, photoelectrochem.-cell)

IT 32168-10-8 88375-40-0 88375-41-1 88375-42-2 88375-43-3
88375-44-4 88375-45-5

(ionene, **electrodes** from semiconductor coated with layer of catalysts-contg., photoelectrochem.-cell)

IT 1333-74-0P, preparation 7782-44-7P, preparation

(manuf. of, in photoelectrochem. cells, **electrodes** coated with ionic polymert contg. dispersed catalyst for)

L55 ANSWER 19 OF 27 HCA COPYRIGHT 2003 ACS on STN

98:110704 Semiconductors and semiconductor photoelectrodes. Manassen, Joost; Cahen, David; Hodes, Gary (Yeda Research and Development Co.,

Ltd., Israel). U.S. US 4368216 A 19830111, 7 pp.
Cont.-in-part of U.S. 4,296,188. (English). CODEN: USXXAM.
APPLICATION: US 1980-173814 19800730. PRIORITY: IL 1979-58003
19790808; US 1980-134665 19800327.

AB Photoelectrodes are manufd. by prepg. a slurry of .gtoreq.1 semiconductor, a flux, and a liq. vehicle, applying a **layer** of the slurry to an elec. conductive substrate, and annealing the **layer**. Thus, powd. CdSe and ZnCl₂ were ground together with a mixt. of 5% nonionic detergent in water. This paint was applied to a piece of preheated Ti. The **coated** Ti was heated at 650.degree. for 12 min in Ar contg. 20 ppm O. A photoelectrochem. cell contg. this **electrode**, a sulfided brass gauze counter **electrode**, and an electrolyte of aq. 1M KOH, 1M Na₂S.9H₂O, and 1M S gave under air-mass-1 conditions a short-circuit current (I) of 26.2 mA, an open-circuit voltage (V) of 530 mV, and a photopotential (P) of 388 mV over an optimal load of 24 .OMEGA.. After etching the CdSe **electrode** in 3% HNO₃ in concd. HCl the same photoelectrochem. cell yielded I = 36.5 mA, V = 605 mV, and P = 424 mV over an optimal load of 17 .OMEGA.. After the **electrode** was dipped for 3 s in 1M aq. ZnCl₂, the cell yielded I = 36.8 mA, V = 660 mV, and P = 463 mV over an optimal load of 18 .OMEGA..

IT 1306-24-7P, uses and miscellaneous 1306-25-8DP,
solid solns. with cadmium sulfide and/or cadmium selenide
1306-25-8P, uses and miscellaneous 1315-09-9P
1315-11-3P

(**electrodes**, photoelectrochem.-cell, prepn. and
performance of)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

RN 1306-25-8 HCA

CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

RN 1306-25-8 HCA

CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

RN 1315-09-9 HCA

CN Zinc selenide (ZnSe) (9CI) (CA INDEX NAME)

Se=Zn

RN 1315-11-3 HCA
 CN Zinc telluride (ZnTe) (8CI, 9CI) (CA INDEX NAME)

Te—Zn

IC B05D003-02; H01M006-36
 NCL 427074000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST semiconductor photoelectrochem cell **electrode**; cadmium
 selenide photoelectrochem cell **electrode**; zinc chloride
 flux photoelectrochem **electrode**; sodium sulfide
 photoelectrochem cell **electrolyte**
 IT **Electrodes**
 (photoelectrochem., semiconductive, prepn. and performance of)
 IT 7440-47-3, uses and miscellaneous
 (**electrodes** from semiconducting layer on
 steel plated with, photoelectrochem.-cell)
 IT 7440-32-6, uses and miscellaneous 7782-42-5, uses and
 miscellaneous
 (**electrodes** from semiconducting layer on,
 photoelectrochem.-cell)
 IT 1303-00-0P, uses and miscellaneous 1306-23-6DP, solid solns. with
 cadmium selenide and/or cadmium telluride 1306-23-6P, uses and
 miscellaneous 1306-24-7DP, solid solns. with cadmium sulfide
 and/or cadmium telluride **1306-24-7P**, uses and
 miscellaneous **1306-25-8DP**, solid solns. with cadmium
 sulfide and/or cadmium selenide **1306-25-8P**, uses and
 miscellaneous 1315-09-9DP, solid solns. with cadmium selenide
1315-09-9P 1315-11-3P 1317-33-5P, uses and
 miscellaneous 12018-94-9P
 (**electrodes**, photoelectrochem.-cell, prepn. and
 performance of)
 IT 7699-45-8
 (flux from cadmium sulfate and, in manuf. of semiconductor
electrodes for photoelectrochem. cells)
 IT 10124-36-4
 (flux from zinc chloride and, in manuf. of semiconductor
electrodes for photoelectrochem. cells)
 IT 10108-64-2
 (flux, in manuf. of semiconductor **electrodes** for
 photoelectrochem. cells)
 IT 1313-82-2, uses and miscellaneous
 (photoelectrochem.-cell **electrolyte**,
 semiconductor)

L55 ANSWER 20 OF 27 HCA COPYRIGHT 2003 ACS on STN

97:117301 **Electrochemical** photovoltaic cells
 /stabilization and optimization of II-VI semiconductors. Noufi, R.;
 Tench, D.; Warren, L. (Rockwell Int. Corp., Thousand Oaks, CA, USA).
 Report, SERI/TR-9276-T3; Order No. DE82002093, 55 pp. Avail. NTIS
 From: Energy Res. Abstr. 1982, 7(5), Abstr. No. 10440 (English)

1981.

AB The goal of this program is to provide a basis for designing a practical **electrochem.** solar **cell** based on the Group II-VI compd. semiconductors. Emphasis is on developing new electrolyte redox systems and **electrode** surface modifications which will stabilize the Group II-VI compds. against photodissoln. without seriously degrading the long-term solar response. Although the MeOH ferro-ferricyanide soln. itself was photolytically unstable, study of this system led to the identification of more promising nonaq. redox electrolytes. Addn. work on redox couple stabilization of n-type CdX photoanodes was focused on both 1- and 2-electron couples. Very promising results were obtained for the alkylammonium chloroferrate (II,III) couple in MeCN. Conducting polymer **films** of polypyrrole photoelectrochem. deposited onto n-type semiconductors were shown to protect these **electrode** materials from photodecompn. while permitting electron exchange with the electrolyte. In a basic aq. ferro-ferricyanide electrolyte contg. cyanide ion, the measured open-circuit voltage for n-type CdTe was 1.3 V, which is practically the bandgap for this material. It now appears that polypyrrole **films** are to some extent permeable to solvent/solute species since the **film** stability depends on the nature of the redox electrolyte.

IT 1306-24-7, uses and miscellaneous
(**anodes**, photoelectrochem., stabilization of)
RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

IT 1306-25-8, properties
(elec. open-circuit potential of, in basic aq. soln. contg. cyanoferrate couple and cyanide ion)
RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

CC 72-2 (Electrochemistry)
Section cross-reference(s): 52, 76
ST solar cell semiconductor stabilization optimization; Group II chalcogenide photoelectrode stabilization; photoanode cadmium selenide stabilization; polypyrrole **film** stabilization photoelectrode; polyaniline **film** stabilization photoelectrode
IT **Electrodes**
(photoelectrochem., Group II chalcogenides, stabilization of)
IT **Anodes**
(photoelectrochem., cadmium selenide, stabilization of)
IT 1306-24-7, uses and miscellaneous

- (**anodes**, photoelectrochem., stabilization of)
- IT 30604-81-0
(**coatings** of, on Group IIV chalcogenides
electrodes, quality compn. prevention in relation to)
- IT 1306-25-8, properties
(elec. open-circuit potential of, in basic aq. soln. contg.
cyanoferrate couple and cyanide ion)
- IT 25233-30-1
(**films**, in stabilization of Group II chalcogenide
semiconductor electrons)

L55 ANSWER 21 OF 27 HCA COPYRIGHT 2003 ACS on STN

94:211521 **Electrochemical photovoltaic cells**

/stabilization and optimization of II-VI semiconductors. Noufi, R.; Tench, D.; Warren, L. (Rockwell Int. Corp., Thousand Oaks, CA, USA). Report, SERI/TR-8002/T1, 73 pp. Avail. NTIS From: Energy Res. Abstr. 1980, 5(24), Abstr. No. 37851 (English) 1980.

- AB Stabilization of n-CdSe against photodissoln. was achieved for the MeOH-(Et₄N)₄Fe(CN)₆-(Et₄N)₃Fe(CN)₆ system. No degrdn. of the photocurrent or the **electrode** surface, even in the presence of traces of H₂O, was obsd. for runs of .1 to req. 700 h at 6 mA/cm² and approx. air-mass-1 intensity. With higher quality single-crystal CdSe, stable short-circuit photocurrents of 15-17 mA/cm² and an open-circuit voltage of 0.7 V were obtained, corresponding to a conversion efficiency of .apprx.5%. Preliminary evaluation of a series of S-contg. 1,2-dithiolene metal complexes for stabilization of Cd chalcogenide photoanodes in soln. was completed. For the 1st time, a conducting polymer **film** (derived from pyrrole) was electrochem. deposited on a semiconductor **electrode**. This could represent a breakthrough in the use of hydrophobic **films** to protect semiconductor photoanodes from dissoln./degrdn. Mixed CdSe-CdTe solid soln. **electrodes** were found to exhibit a min. in both the flatband potential and the bandgap at .apprx.65% CdTe. Both of these shifts would have a detrimental effect on the solar conversion efficiency.

- IT 1306-24-7, uses and miscellaneous
(**anodes**, photoelectrochem.-cell, optimization and
stabilization of)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

- IT 1306-25-8D, solid solns. with cadmium selenide
(**anodes**, photoelectrochem.-cell, properties of)

RN 1306-25-8 HCA

CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 1306-24-7, uses and miscellaneous

(**anodes**, photoelectrochem.-cell, optimization and
 stabilization of)

IT 1306-24-7D, solid solns. with cadmium telluride 1306-25-8D
 , solid solns. with cadmium selenide
 (**anodes**, photoelectrochem.-cell, properties of)

L55 ANSWER 22 OF 27 HCA COPYRIGHT 2003 ACS on STN

94:106551 Active **electrodes** for **electrochemical**

battery cells with redox systems. Hodes, Gary;

Manassen, Joost; Cahen, David (Yeda Research and Development Co.
 Ltd., Israel). Ger. Offen. DE 3004262 19800904; 20 pp.

(German). CODEN: GWXXBX. APPLICATION: DE 1980-3004262 19800206.

AB **Electrodes** for the title S/S²⁻, Se/Se²⁻, and Te/Te²⁻

batteries and photoelectrochem. cells comprise an active
 material-coated substrate of steel, stainless steel,

porous C, graphite, Co, Ti, Ta, W, Mo, V, and Cr. The possible
 active materials are CoS, Cu₂S, RuS₂, MoS₂, PbSe, Cu₂Se, and NiTe.
 Thus, several chalcogenide-coated stainless steel

electrodes were prep'd. and their properties in
 photoelectrochem. cells were measured.

IT 1314-05-2 1314-91-6D, solid solns. with lead
 selenide 11115-77-8 12017-13-9D, solid solns.
 with cobalt selenide 12142-88-0D, solid solns. with nickel
 selenide 39280-96-1

(**electrodes** from stainless steel coated with,
 photoelectrochem.-cell)

RN 1314-05-2 HCA

CN Nickel selenide (NiSe) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Ni=Se

RN 1314-91-6 HCA

CN Lead telluride (PbTe) (6CI, 8CI, 9CI) (CA INDEX NAME)

Pb=Te

RN 11115-77-8 HCA

CN Cobalt telluride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Te	x	13494-80-9
Co	x	7440-48-4

RN 12017-13-9 HCA

CN Cobalt telluride (CoTe) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Co==Te

RN 12142-88-0 HCA
 CN Nickel telluride (NiTe) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Ni==Te

RN 39280-96-1 HCA
 CN Lead telluride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
Te	x	13494-80-9
Pb	x	7439-92-1

IC H01M004-58; H01M010-36; H01M014-00
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST chalcogenide **electrode** photoelectrochem cell; stainless
 steel chalcogenide **coating electrode**;
battery redox chalcogenide **electrode**; sulfide
electrode photoelectrochem cell; selenide **electrode**
 photoelectrochem cell; telluride **electrode**
 photoelectrochem cell
 IT **Electrodes**
 (photoelectrochem.-cell, chalcogenide-coated stainless
 steel)
 IT 22205-45-4
 (**electrodes** from brass **coated** with,
 photoelectrochem.-cell)
 IT 12597-68-1, uses and miscellaneous
 (**electrodes** from chalcogenide-coated,
 photoelectrochem.-cell)
 IT 12597-71-6, uses and miscellaneous
 (**electrodes** from copper sulfide-coated,
 photoelectrochem.-cell)
 IT 1317-33-5, uses and miscellaneous
 (**electrodes** from molybdenum **coated** with,
 photoelectrochem.-cell)
 IT 7439-98-7, uses and miscellaneous
 (**electrodes** from molybdenum disulfide-coated,
 photoelectrochem.-cell)
 IT 1307-99-9D, solid solns. with cobalt telluride **1314-05-2**
1314-05-2D, solid solns. with nickel telluride **1314-87-0D**, solid
 solns. with lead selenide **1314-91-6D**, solid solns. with
 lead selenide **1317-42-6** **11113-75-0** **11115-77-8**
12017-13-9D, solid solns. with cobalt selenide
12069-00-0D, solid solns. with lead sulfide and with lead telluride
12142-88-0D, solid solns. with nickel selenide **37245-92-4**
39280-96-1

(**electrodes** from stainless steel **coated** with,
photoelectrochem.-cell)

L55 ANSWER 23 OF 27 HCA COPYRIGHT 2003 ACS on STN

91:143244 On the photopotential output of **electrochemical**
solar **cells** based on **layer**-type d-band
semiconductors. Tributsch, H.; Gerischer, H.; Clemen, C.; Bucher,
E. (Fritz-Haber-Inst., Max-Planck-Ges., Berlin, D-1000/33, Fed. Rep.
Ger.). Berichte der Bunsen-Gesellschaft, 83(7), 655-8 (English)
1979. CODEN: BBPCAX. ISSN: 0005-9021.

AB A comparative study of Mo and W-dichalcogenides in contact with
various redox electrolytes revealed that in abs. values as well as
in relation to the energy gap, n-type WSe₂ is producing the largest
photopotential output. It exceeds 0.55 V in presence of several
redox couples (Fe^{2+/3+}, hydroquinone/quinone pH = 10, Fe(CN)₆^{3-/4-},
Ru^{3+/4+}, Br⁻/Br₂, Ce^{3+/4+}) and amts. to more than 0.7 V in presence
of I⁻/I₂. Addn. of small quantities of iodide can increase the
photopotential output in presence of redox systems with lower redox
potential by .1 to eq. 0.1 V. This gives further evidence for the
specific photochem. surface activity of iodide on **layer**
-type **electrodes** and is an example for the influence of
surface states on the efficiency of **energy**
conversion. The higher photopotential output of WSe₂ as
compared to that of MoSe₂ (max. value I⁻/I₂, 0.56 V) is explained in
terms of a neg. shift of the conduction band edge. With respect to
the efficiency of electrochem. solar **energy**
conversion WSe₂ is considered to be the most promising
compd. among **layer**-type d-band semiconductors.

IT 12058-18-3 12058-20-7 12067-46-8

(**electrodes**, photoelectrochem. cells contg., properties
of)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se—Mo—Se

RN 12058-20-7 HCA

CN Molybdenum telluride (MoTe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te—Mo—Te

RN 12067-46-8 HCA

CN Tungsten selenide (WSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se—W—Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST selenide tungsten photoelectrochem cell; molybdenum selenide
photoelectrochem cell; chalcogenide **layer** type

- photoelectrochem cell
- IT Iodides, uses and miscellaneous
(photoelectrochem. cells contg., properties of **layer**
-type d-band semiconductors in)
- IT 1317-33-5, uses and miscellaneous **12058-18-3**
12058-20-7 12067-46-8
(**electrodes**, photoelectrochem. cells contg., properties
of)
- L55 ANSWER 24 OF 27 HCA COPYRIGHT 2003 ACS on STN
89:82158 **Electrode** for electrolytic process involving hydrogen
generation. Westerlund, H. Benny (Gow Enterprises Ltd., Can.).
(U.S. US 4089771 **19780516**, 6 pp. (English). CODEN:
USXXAM. APPLICATION: US 1977-806409 19770614.
- AB A Ti bipolar **electrode** is described. The central core is
of Ti expanded metal sheet and an extension of this provides the
anodic surface which may be coated, e.g., by Pt as is a well
known practice. The **cathodic** surface may be activated to
provide a hydride surface or coated with MoS₂ or with Ag then MoS₂.
The **electrode** space is on the exposed side of the
cathodic element and is of a non-conductive material such as
Kel-F or Teflon. The **electrode** was tested in brine
electrolysis and ClO₃- **cells**.
- IT **1317-33-5**, uses and miscellaneous
(coatings, on titanium porous bipolar **electrodes**)
- RN 1317-33-5 HCA
- CN Molybdenum sulfide (MoS₂) (8CI, 9CI) (CA INDEX NAME)

S=Mo=S

- IC C25B011-03
- NCL 204284000
- CC 72-10 (Electrochemistry)
- ST titanium bipolar **electrode** brine chlorate; molybdenum
sulfide coating titanium **electrode**
- IT Brines
(electrolysis of, porous bipolar titanium **electrodes**
for)
- IT **Coating materials**
(molybdenum sulfide, on porous bipolar titanium
electrodes)
- IT **1317-33-5**, uses and miscellaneous
(coatings, on titanium porous bipolar **electrodes**)
- IT 7440-32-6, uses and miscellaneous
(**electrodes**, bipolar, porous, molybdenum disulfide
coated)
- IT 1333-74-0P, preparation
(generation of, **electrode** for)
- IT 14866-68-3P
(manuf. of, porous bipolar titanium **electrodes** for)

L55 ANSWER 25 OF 27 HCA COPYRIGHT 2003 ACS on STN

89:46261 Chalcogenides of arsenic, antimony and bismuth as positive **electrodes** in lithium **batteries**. Besenhard, Juergen O. (Anorg.-Chem. Inst., Tech. Univ. Muenchen, Munich, Fed. Rep. Ger.). Zeitschrift fuer Naturforschung, Teil B: Anorganische Chemie, Organische Chemie, 33B(3), 279-83 (German) 1978. CODEN: ZNBAD2. ISSN: 0340-5087.

AB Redox properties of **layer**-type chalcogenides of Group VA elements were investigated in molten salt and org. Li+-contg. electrolytes. Even at room temp., Bi₂S₃, Bi₂Se₃, and Bi₂Te₃ can be reduced with .apprx.100% efficiency to Li₃Bi as final product. The redn. of Bi₂S₃ to Bi₀ and LiS can be reversed in org. electrolytes.

IT 1304-82-1 12068-69-8

(**cathodes**, in **batteries** with lithium **anode**, properties of)

RN 1304-82-1 HCA

CN Bismuth telluride (Bi₂Te₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 12068-69-8 HCA

CN Bismuth selenide (Bi₂Se₃) (6CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	3	7782-49-2
Bi	2	7440-69-9

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST antimony chalcogenide **battery cathode**; arsenic chalcogenide **battery cathode**; bismuth chalcogenide **battery cathode**; sulfide bismuth **battery cathode**; selenide bismuth **battery cathode**; telluride bismuth **battery cathode**; lithium **battery chalcogenide cathode**

IT **Cathodes**

(**battery**, chalcogenides of arsenic, antimony and bismuth, properties of)

IT 1303-33-9 1304-82-1 1345-04-6 1345-07-9
12068-69-8

(**cathodes**, in **batteries** with lithium **anode**, properties of)

L55 ANSWER 26 OF 27 HCA COPYRIGHT 2003 ACS on STN

85:180084 Semiconductor-electrolyte photovoltaic **energy converter**. Anderson, William W.; Anderson, Larry B. (Dep. Electr. Eng., Ohio State Univ., Columbus, OH, USA). NASA Contract. Rep., NASA-CR-143107, f., 1st, 1975, 702-12 (English) 1975. CODEN: NSCRAQ.

AB Feasibility and practicality of a solar cell consisting of a semiconductor surface in contact with an electrolyte are considered. Characteristics of single crystal CdS, CdSe, CdTe, GaAs, and thin-film CdS in contact with aq. and MeOH electrolytes are

reported.

IT 1306-24-7 1306-25-8

(electrodes, photoelectrochem.-cell, characteristics and soln. stability of)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

RN 1306-25-8 HCA

CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Photoelectric cells

(solar, electrolyte-semiconductor, characteristics and practicality of)

IT 1303-00-0, uses and miscellaneous 1306-23-6, uses and miscellaneous 1306-24-7 1306-25-8

(electrodes, photoelectrochem.-cell, characteristics and soln. stability of)

L55 ANSWER 27 OF 27 HCA COPYRIGHT 2003 ACS on STN

79:99856 Alkali metal/sulfur **battery** having a **cathodic** current collector coated with molybdenum disulfide. Stringham, Robert R.; Taplin, William H. (Dow Chemical Co.). (U.S. US 3749603 19730731, 6 pp. (English). CODEN: USXXAM. APPLICATION: US 1972-244410 19720417.

AB An alkali metal/S **battery** having as a **cathodic** current collector a shaped member comprising a substrate on which there is a 50-5000 .ANG. thick coating of MoS₂ is disclosed. The substrate can be an outer layer or may constitute the entire member and consists essentially of Al, Mg or alloys contg. at least minor amts. of these metals. The elec. resistance of the coated **cathode** generally drops to a min. upon being contacted with a molten alkali metal polysulfide for a brief time. Test specimens were prepd. by cutting in half a 5/16 .times. 3 in. strip of the sheet or foil. After pretreatment, specimens were bolted to stainless steel lead-in wires, spaced apart by a 1/8 in. thick glass bar at their upper ends and inserted in a test tube. The tube was filled with Na₂S₄ in a dry box and placed in a heating block while connected to a low pressure purge of dry N. When the sulfide melted, the position of the strips was adjusted, if necessary, so that 10 cm² of surface on each strip was in contact with the melt. A temp. of 300.degree. was maintained. A test voltage of 100 mV d.c. was applied, with the polarity being reversed automatically at 0.5-hr. intervals. The surface resistance after any interval of test duration was detd.

IT 1317-33-5

(coatings, on aluminum alloys, for **cathodes** for alkali metal-sulfur **batteries**)

RN 1317-33-5 HCA

CN Molybdenum sulfide (MoS₂) (8CI, 9CI) (CA INDEX NAME)

S==Mo==S

IC H01M

NCL 136006000

CC 77-2 (Electrochemistry)

ST alkali metal sulfur **battery**; molybdenum sulfide **cathode** collector

IT **Batteries**, secondary
(alkali metal-sulfur, molybdenum disulfide coatings on **cathode** substrates in)

IT **Coating materials**
(molybdenum disulfide, on aluminum alloys, for **cathodes** for alkali metal-sulfur **batteries**)

IT 11146-12-6 12608-67-2 42614-09-5
(coatings on, of molybdenum disulfide, for **cathode** in alkali metal-sulfur **batteries**)

IT **1317-33-5**
(coatings, on aluminum alloys, for **cathodes** for alkali metal-sulfur **batteries**)

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L56 ANSWER 1 OF 18 HCA COPYRIGHT 2003 ACS on STN

118:106330 Secondary lithium **batteries** with **coated anodes**. Kanbara, Teruhisa; Sato, Yoshiko; Uemachi, Yasushi; Matsuda, Hiromu; Tonomura, Tadashi; Takeyama, Kenichi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04248276 A2 **19920903** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-7502 19910125.

AB The **batteries** use Li+-conductive electrolytes, Li--conductive **cathodes**, and Li (alloy) **anodes coated** with a substance having both Li+ and electron cond. Preferably, the **coating** substances are graphitic C or transition metal dichalcogenides.

IT **12058-18-3**, Molybdenum selenide (MoSe₂)
(**coatings**, lithium **anodes** contg., for secondary **batteries**)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Mo==Se

IC ICM H01M010-40

ICS H01M004-02

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery anode** carbon **coating**;
chalcogenide **coating** lithium **anode**; molybdenum
sulfide **coating** lithium **anode**
IT Transition metal chalcogenides
(**coatings**, lithium **anodes** contg., for
secondary **batteries**)
IT **Anodes**
(**battery**, lithium, with lithium ion- and
electron-conductive **coatings**, for dendrite growth
prevention)
IT Lithium alloy, base
(**anodes**, with lithium ion- and electron-conductive
coatings, for secondary **batteries**)
IT 7439-93-2, Lithium, uses
(**anodes**, with lithium ion- and electron-conductive
coatings, for secondary **batteries**)
IT 1317-33-5, Molybdenum sulfide (MoS₂), uses 7782-42-5, Graphite,
uses 12039-13-3, Titanium sulfide (TiS₂) **12058-18-3**,
Molybdenum selenide (MoSe₂) 12136-97-9, Niobium sulfide (NbS₂)
(**coatings**, lithium **anodes** contg., for
secondary **batteries**)

L56 ANSWER 2 OF 18 HCA COPYRIGHT 2003 ACS on STN

114:9642 Solid-state alkali metal **batteries** having porous
cathode current collectors. Fauteux, Denis G.; Moore,
Michael J.; Blonsky, Peter M. (USA). U.S. US 4925752 A
19900515, 7 pp. (English). CODEN: USXXAM. APPLICATION: US
1989-319434 19890303.

- AB A laminar **battery** comprises an alkali metal **anode**
(Li foil, a metal foil **coated** with a **layer** of Li
or Li alloy), a solid ionically conducting electrolyte **layer**
, and a **cathode**/current collector **layer**, which
consists of an elec. conductive substrate having a plurality of
surface voids and a radiation-cured **cathode** compn. The
compn. comprises a compd. such as V6O13, MoO₂, TiS₂, FeOCl; an elec.
conductive filler (C particles); and a radiation-cured ionically
conductive electrolyte. The electrolyte comprises a solid soln. of
an ionizable alkali metal or alk. earth salt and an ionically
conductive polymer contg. a repeating unit CH₂C(H)(R)O, CHCH₂NR₁, or
CH₂CH(OR₃R₂), where R is H, R₂, CH₂OR₂, CH₂OR₃R₂, CH₂NMe₂; R₁ is R₂
or R₃R₂, R₂ is C1-16 (preferably C1-4) alkyl or C5-8 cycloalkyl
group and R₃ is an ether group. The conductive substrate is C, Cu,
Al, Ni, steel, and/or Pb. The importance of roughened surface of
the conductive substrate (etched Ni foil, Ni felt) on the Li
battery performance was demonstrated. The **battery**
cathode mixt. consisted of V6O13 45, C 4, and electrolyte
51%. The electrolyte consisted of propylene carbonate 70, PEO 3,
LiCF₃SO₃ 6, and radiation-curable acrylate 21%.
IT **12034-77-4**, Niobium diselenide

(**cathodes**, contg. alkali metal or alk. earth salt and
conductive polymer, current collectors for, in **batteries**)

)
 RN 12034-77-4 HCA
 CN Niobium selenide (NbSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Nb==Se

IC ICM H01M006-18
 NCL 429191000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST lithium vanadium oxide **battery**; **cathode** etched
 nickel current collector; solid electrolyte lithium vanadium
battery
 IT Acrylic polymers, uses and miscellaneous
 (electrolytes from lithium-PEO complexes and propylene carbonate
 and, for **batteries**)
 IT **Cathodes**
 (**battery**, vanadium oxide, contg. lithium
 trifluoromethanesulfonate and conductive polymer, with etched
 nickel current collector)
 IT 7429-90-5, Aluminum, uses and miscellaneous 7439-92-1, Lead, uses
 and miscellaneous 7440-02-0, Nickel, uses and miscellaneous
 7440-44-0, Carbon, uses and miscellaneous 7440-50-8, Copper, uses
 and miscellaneous 12597-69-2, Steel, uses and miscellaneous
 (**cathode** collector, surface etched, for
batteries)
 IT 1307-96-6, Cobalt oxide (CoO), uses and miscellaneous 1313-13-9,
 Manganese dioxide, uses and miscellaneous 1314-62-1, Vanadium
 oxide (V₂O₅), uses and miscellaneous 1317-37-9, Iron sulfide (FeS)
 1317-38-0, Copper oxide (CuO), uses and miscellaneous 11126-15-1,
 Lithium vanadium oxide 12018-01-8, Chromium oxide (CrO₂)
 12033-29-3, Molybdenum sulfide (MoS₃) **12034-77-4**, Niobium
 diselenide 12039-13-3, Titanium disulfide 12137-52-9, Vanadium
 oxide (V₃O₈) 12166-28-8, Vanadium disulfide 13870-10-5, Iron
 chloride oxide (FeClO) 15915-20-5, Chromium oxybromide (CrOBr)
 16812-54-7, Nickel sulfide (NiS) 18868-43-4, Molybdenum oxide
 (MoO₂)
 (**cathodes**, contg. alkali metal or alk. earth salt and
 conductive polymer, current collectors for, in **batteries**
)
 IT 12037-42-2, Vanadium oxide (V₆O₁₃)
 (**cathodes**, contg. lithium trifluoromethanesulfonate,
 current collectors for, in **batteries**)
 IT 108-32-7, Propylene carbonate
 (electrolytes from lithium-PEO complexes and radiation-curable
 acrylate and, for **batteries**)
 IT 7439-93-2D, Lithium, PEO complexes 25322-68-3D, PEO, lithium
 complexes
 (electrolytes from propylene carbonate and radiation-curable
 acrylate and, for **batteries**)

L56 ANSWER 3 OF 18 HCA COPYRIGHT 2003 ACS on STN

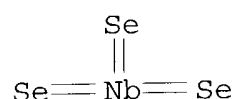
108:207653 Studies on niobium triselenide **cathode** material for lithium rechargeable cells. Ratnakumar, B. V.; Ni, C. L.; DiStefano, S.; Somoano, R. B.; Bankston, C. P. (Jet Propul. Lab., California Inst. Technol., Pasadena, CA, 91109, USA). Proceedings - Electrochemical Society, 88-6(Proc. Symp. Primary Second. Ambient Temp. Lithium Batteries, 1987), 565-80 (English) 1988. CODEN: PESODO. ISSN: 0161-6374.

AB NbSe₃ **cathode** intercalates reversibly with 3 equivs. Li at a utilization efficiency of .apprx.90%. The Li intercalation occurs at different closely spaced potentials between 1500 and 1800 mV vs. Li⁺/Li. The kinetics of NbSe₃ redn. is essentially governed by the slow diffusion of Li ions inside the **layered cathode**. The exchange c.d. and apparent transfer coeff. are 32 .mu.A/cm² and 0.21, resp. The prepn., characterization, and performance of NbSe₃ are described. Several electrochem. techniques (cyclic voltammetry, const. current/const. potential discharge, d.c. potentiodynamic scans, a.c. impedance, and a.c. voltammetry) were used to study the Li intercalation mechanism. A phys. model is presented to illustrate the various steps involved in NbSe₃ redn.

IT 12034-78-5, Niobium triselenide
(**cathodes**, for lithium rechargeable **batteries**)

RN 12034-78-5 HCA

CN Niobium selenide (NbSe₃) (7CI, 9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

ST niobium selenide **cathode** lithium **battery**;
intercalation **cathode** niobium selenide **battery**

IT Electrolytic polarization
(of niobium selenide prismatic **cathode**, in lithium hexafluoroarsenate-methyltetrahydrofuran electrolyte)

IT **Cathodes**
(**battery**, intercalation, niobium selenide, for lithium rechargeable **batteries**)

IT 12034-78-5, Niobium triselenide
(**cathodes**, for lithium rechargeable **batteries**)

IT 55886-04-9P, Lithium niobium selenide (Li₃NbSe₃)
(formation of, in discharge of lithium-niobium triselenide **battery cathode**)

IT 61673-65-2P, Lithium niobium selenide
(intercalated, formation of, in discharge of lithium-niobium triselenide **battery cathode**)

L56 ANSWER 4 OF 18 HCA COPYRIGHT 2003 ACS on STN

105:199063 Photoelectrochemical cells with n-type zinc selenide and n-type antimony selenide (Sb_2Se_3) thin **film** semiconductor **electrodes**. Roy, C. B.; Nandi, D. K.; Mahapatra, P. K. (Dep. Chem., Indian Inst. Technol., Kharagpur, India). Electrochimica Acta, 31(10), 1227-9 (English) 1986. CODEN: ELCAAV. ISSN: 0013-4686.

AB Photoelectrochem. cells with thin **film** semiconductor **electrode** made of ZnSe or Sb_2Se_3 and a platinized Pt **electrode** as counter **electrode** with I^-/I_3^- electrolyte were investigated. The max. efficiency was obsd. with the cells for light wavelength .apprx.600 nm. The conversion efficiencies of the cells with ZnSe **electrode** and Sb_2Se_3 **electrode** were 0.03% and 0.13%, resp., with light intensity of 92 mW cm^{-2} .

IT 1315-05-5 1315-09-9

(**electrodes**, photoelectrochem. semiconductive)

RN 1315-05-5 HCA

CN Antimony selenide (Sb_2Se_3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 1315-09-9 HCA

CN Zinc selenide (ZnSe) (9CI) (CA INDEX NAME)

$\text{Se}=\text{Zn}$

CC 72-2 (Electrochemistry)

Section cross-reference(s): 52, 76

ST antimony selenide photoelectrochem semiconductive **electrode** ; zinc selenide photoelectrochem semiconductive **electrode**; selenide antimony zinc photoelectrochem **electrode**; iodide redox **electrolyte** photoelectrochem **cell**

IT **Electrodes**

(photoelectrochem., semiconductive, antimony selenide and zinc selenide)

IT 7440-06-4, uses and miscellaneous

(**electrode**, counter, in photoelectrochem. cell with antimony selenide or zinc selenide semiconductive **electrodes** and iodide/triiodide redox electrolyte)

IT 1315-05-5 1315-09-9

(**electrodes**, photoelectrochem. semiconductive)

L56 ANSWER 5 OF 18 HCA COPYRIGHT 2003 ACS on STN

105:82296 Correction of: 97:147577 Semiconductor **electrodes** in contact with aqueous and nonaqueous redox-electrolytes for photovoltaic solar **energy conversion**.. Gerischer, H.; Decker, F.; Kautek, W. (Fritz-Haber-Inst., Max-Planck-Ges., Berlin, D-1000, Fed. Rep. Ger.). Solar Energy R&D in the European Community, Series D: Photochemical, Photoelectrochemical and Photobiological Processes, 1(Photochem., Photoelectrochem. Photobiol. Processes), 88-93 (English) 1982. CODEN: SRDDD6. ISSN: 0167-7950.

AB The exceptional behavior of I^-/I_3^- system in contact with

transition-metal dichalcogenide (MoS₂, MoSe₂, and WSe₂) photoelectrodes, and **electrodes** of semiconductor oxide heterojunctions for photoelectrolysis are discussed. SnO₂- and In₂O₃-**coated** n-Si were tested in different aq. solns. and the chem. and electrochem. stability of such **electrodes** against corrosion was proved.

IT 12058-18-3 12067-46-8

(**electrodes**, photoelectrochem.-cell, performance of, in aq. redox electrolytes)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==Mo==Se

RN 12067-46-8 HCA

CN Tungsten selenide (WSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se==W==Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST photoelectrochem cell **electrode** molybdenum sulfide;
selenide molybdenum photoelectrochem cell; tungsten selenide
photoelectrochem cell; silicon tin oxide photoelectrochem cell;
indium oxide silicon photoelectrochem cell; iodide photoelectrochem
cell **electrolyte**

IT **Electrodes**

(photoelectrochem., semiconductive, performance of, in aq. and
nonaq. redox electrolytes)

IT 7440-21-3, uses and miscellaneous

(**electrodes** from indium oxide- or tin oxide-
coated, photoelectrochem.-cell, performance of)

IT 1312-43-2 18282-10-5

(**electrodes** from silicon **coated** with,
photoelectrochem.-cell, performance of)

IT 12058-18-3 12067-46-8

(**electrodes**, photoelectrochem.-cell, performance of, in
aq. redox electrolytes)

IT 14900-04-0

(**electrolyte** contg., photoelectrochem.-cell,
performance of molybdenum and tungsten chalcogenide
electrodes in aq.)

L56 ANSWER 6 OF 18 HCA COPYRIGHT 2003 ACS on STN

104:92052 Optical **energy conversion** in

photoelectrochemical cells with semiconductor **electrodes**.

Maruyama, Toshiro; Goto, Kazuhito (Coll. Eng., Kyoto Univ., Kyoto,
Japan). Kagaku Kogaku, 50(1), 58-61 (Japanese) 1986.

CODEN: KKGKA4. ISSN: 0375-9253.

AB Polycryst. semiconductor **films** for regeneration-type

photoelectrochem. cells were made of CdSe and TiO₂ by electrophoretic pptn. The current-potential property and solar **energy conversion** efficiency of the thin **films as anodes** were studied.

IT 1306-24-7P, uses and miscellaneous
(**electrodes**, photoelectrochem., prepn. and properties of)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST cadmium selenide photoelectrochem **electrode**; titania photoelectrochem **electrode**

IT **Anodes**
(photoelectrochem., cadmium selenide and titania, prepn. and properties of)

IT 1306-24-7P, uses and miscellaneous 13463-67-7P, uses and miscellaneous
(**electrodes**, photoelectrochem., prepn. and properties of)

L56 ANSWER 7 OF 18 HCA COPYRIGHT 2003 ACS on STN

101:100115 Semiconductor-electrolyte photoelectrode systems. IV. Electrodeposition and photoelectrochemical properties of manganese selenide (MnSe) **film electrode**. Song, Tianping; Wang, Yujiang; Lu, Wenzhe; Yang, Jun; Mi, Tianying (Changchun Inst. Appl. Chem., Acad. Sin., Changchun, Peop. Rep. China). Zhongguo Kexueyuan Changchun Yingyong Huaxue Yanjiuso Jikan, 19, 34-42 (Chinese) 1982. CODEN: ZKCJEE.

AB The bandgap of the electrodeposited MnSe was estd. by photoacoustic measurements to be about 1.91 eV in agreement with that reported in literature. Photoelectrochem. measurements showed typical photovoltaic characteristics with **energy conversion** efficiency about 1% under Xe light of moderate intensity. Doping (by codeposition) of certain rare-earth (such as Pr, Sm, etc.) ions considerably enhanced the photoeffects of the MnSe **electrode**.

IT 37320-90-4
(**electrodes**, photoelectrochem.)

RN 37320-90-4 HCA

CN Manganese selenide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Se	x	7782-49-2
Mn	x	7439-96-5

CC 72-2 (Electrochemistry)

- Section cross-reference(s): 76
- ST manganese selenide photoelectrochem **electrode**; rare earth doping manganese selenide
- IT Rare earth metals, uses and miscellaneous
(doping with, of manganese selenide photoelectrochem. **electrodes**)
- IT **Electrodes**
(photoelectrochem., manganese selenide)
- IT 37320-90-4
(**electrodes**, photoelectrochem.)
- L56 ANSWER 8 OF 18 HCA COPYRIGHT 2003 ACS on STN
99:215705 **Electrochemical solar cells** with
layer-type semiconductor **anodes**. Stabilization of
the semiconductor **electrode** by selective polyindole
electrodeposition. Fornarini, L.; Stirpe, F.; Scrosati, B. (Ist.
Chim. Fis., Univ. Rome, Rome, Italy). Journal of the
Electrochemical Society, 130(11), 2184-7 (English) 1983.
CODEN: JESOAN. ISSN: 0013-4651.
- AB Electropolymn. of indole was investigated on Pt and MoSe2
electrodes. When performed in the dark, the electropolymn.
is selectively directed to the surface defects of the semiconductor.
The effect of this surface treatment was investigated. The
electropolymn. of indole effectively blocks the defect sites and
produces a stable improvement on the output characteristics of
photoelectrochem. cells with **layer**-type semiconductor
anodes.
- IT 12058-18-3
(**anodes** from polyindole-stabilized,
photoelectrochem.-cell)
- RN 12058-18-3 HCA
- CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)
- Se=Mo=Se
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72
- ST platinum polyindole **electrode**; molybdenum selenide
polyindole photoelectrochem cell; **electrode** molybdenum
selenide polyindole photoelectrochem
- IT **Anodes**
(photoelectrochem., molybdenum selenide, polyindole-stabilized)
- IT 12058-18-3
(**anodes** from polyindole-stabilized,
photoelectrochem.-cell)
- IT 82451-55-6
(**anodes** stabilized with, **layer**-type
semiconductor, photoelectrochem.-cell)
- IT 7440-06-4, uses and miscellaneous
(**electrodes**, contg. deposited polyindole, voltammogram
of, in aq. iodide-iodine)

L56 ANSWER 9 OF 18 HCA COPYRIGHT 2003 ACS on STN

98:92635 **Electrochemical solar cells** using cadmium

selenide thin-film **electrodes**. Xiao, Xu Rui;

Tien, H. Ti (Dep. Biophys., Michigan State Univ., East Lansing, MI, 48824, USA). Journal of the Electrochemical Society, 130(1), 55-9

(English) 1983. CODEN: JESOAN. ISSN: 0013-4651.

AB Electrochem. photocells of a CdSe thin-film **anode**

and a Pt **cathode** immersed in M Na₂S-NaOH-S soln. were

studied. CdSe thin **films** were formed on Ti, Cr, Mo, SnO₂,

glassy C, and graphite substrates by **coating** an aq. mixt.

of CdSe, ZnCl₂, and a surfactant and subsequently sintering at

400-500.degree. in air. The current-voltage (I-V) relations, output

power efficiency, open-circuit voltage, and short-circuit current

were measured. A 7% power conversion efficiency was obtained at 20

mW/cm² light intensity after photoetching. The monochromatic I-V

curves were analyzed.

IT 1306-24-7, uses and miscellaneous

(**anodes**, photoelectrochem.-cell, performance of thin-film)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST photoelectrochem cell cadmium selenide **electrode**; titanium

cadmium selenide photoelectrochem **electrode**; chromium

cadmium selenide photoelectrochem **electrode**; molybdenum

cadmium selenide photoelectrochem **electrode**; carbon

cadmium selenide photoelectrochem **electrode**; graphite

cadmium selenide photoelectrochem **electrode**; tin dioxide

cadmium selenide **electrode**

IT **Anodes**

Photoelectric devices, solar

(photoelectrochem., cadmium selenide, performance of thin-film)

IT 1306-24-7, uses and miscellaneous

(**anodes**, photoelectrochem.-cell, performance of thin-film)

IT 7439-98-7, uses and miscellaneous 7440-32-6, uses and

miscellaneous 7440-47-3, uses and miscellaneous 7782-42-5, uses

and miscellaneous 18282-10-5

(**electrodes** from cadmium selenide-coated,

photoelectrochem.-cell, performance of thin-film)

IT 7440-44-0, uses and miscellaneous

(glassy, **electrodes** from cadmium selenide-

coated, photoelectrochem.-cell, performance of thin-film)

L56 ANSWER 10 OF 18 HCA COPYRIGHT 2003 ACS on STN

97:147577 Semiconductor **electrodes** in contact with aqueous and nonaqueous redox-electrolytes for photovoltaic solar **energy conversion**. Gerischer, H.; Decker, F.; Kautek, W. (Fritz-Haber-Inst., Max-Planck-Ges., Berlin, D-1000/33, Fed. Rep. Ger.). Solar Energy R&D in the European Community, Series D: Photochemical, Photoelectrochemical and Photobiological Processes, 1(Photochem., Photoelectrochem. Photobiol. Processes), 88-93 (English) **1982**. CODEN: SRDDD6. ISSN: 0167-7950.

AB The exceptional behavior of I-/I₃- system in contact with transition-metal dichalcogenide (MoS₂, MoSe₂, and WSe₂) photoelectrodes, and **electrodes** of semiconductor oxide heterojunctions for photoelectrolysis are discussed. SnO₂- and Tn₂O₃-**coated** n-Si were tested in different aq. solns. and the chem. and electrochem. stability of such **electrodes** against corrosion was proved.

IT 12058-18-3 12067-46-8

(**electrodes**, photoelectrochem.-cell, performance of, in aq. redox electrolytes)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=Mo=Se

RN 12067-46-8 HCA

CN Tungsten selenide (WSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=W=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 76

ST photoelectrochem cell **electrode** molybdenum sulfide; selenide molybdenum photoelectrochem cell; tungsten selenide photoelectrochem cell; silicon tin oxide photoelectrochem cell; indium oxide silicon photoelectrochem cell; iodide photoelectrochem **cell electrolyte**

IT **Electrodes**

(photoelectrochem., semiconductive, performance of, in aq. and nonaq. redox electrolytes)

IT 7440-21-3, uses and miscellaneous

(**electrodes** from indium oxide- or tin oxide-**coated**, photoelectrochem.-cell, performance of)

IT 1312-43-2 18282-10-5

(**electrodes** from silicon **coated** with, photoelectrochem.-cell, performance of)

IT 12058-18-3 12067-46-8

(**electrodes**, photoelectrochem.-cell, performance of, in aq. redox electrolytes)

IT 14900-04-0

(**electrolyte** contg., photoelectrochem.-**cell**, performance of molybdenum and tungsten chalcogenide)

electrodes in aq.)

L56 ANSWER 11 OF 18 HCA COPYRIGHT 2003 ACS on STN

96:202533 **Electrochemical solar cells** with

layer-type semiconductor anodes. Nonaqueous

electrolyte cells. Fornarini, L.; Stirpe, F.;

Scrosati, B. (Ist. Chim. Fis., Univ. Rome, Rome, Italy). Journal of the Electrochemical Society, 129(5), 1155-6 (English) 1982

. CODEN: JESOAN. ISSN: 0013-4651.

AB The output characteristics of the n-MoSe₂|3 KI, 0.15M I₂, formamide|Pt cell are promising, showing fill-factor and efficiency values which approach those obtained in aq. solns. No degrdn. in the cell was obsd. after continuous operation at the max. power point for >1 wk.

IT 12058-18-3

(**electrodes**, photoelectrochem. cells contg., performance of nonaq.)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=Mo=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 12058-18-3

(**electrodes**, photoelectrochem. cells contg., performance of nonaq.)

L56 ANSWER 12 OF 18 HCA COPYRIGHT 2003 ACS on STN

96:151221 Semiconductor **electrodes.** 44.

Photoelectrochemistry at polycrystalline p-type tungsten selenide **films.** Abruna, Hector D.; Bard, Allen J. (Dep. Chem., Univ. Texas, Austin, TX, 78712, USA). Journal of the Electrochemical Society, 129(3), 673-6 (English) 1982. CODEN: JESOAN. ISSN: 0013-4651.

AB The title **electrodes** were used in the study of photoelectrochem. redox behavior of several common couples. The highest output was obtained with FeL₃⁺ where L is macrocyclic ligand prepd. by condensation of diacetylpyridine and triethylenetetramine. The p-WSe₂ **electrode** was characterized by the flatband potential, the doping d., the **film** resistivity and the scanning electron microscope. The use of some of these systems in solar **energy conversion** was considered.

IT 12067-46-8

(**films** of polycryst. p-type, photoelectrochem. of)

RN 12067-46-8 HCA

CN Tungsten selenide (WSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=W=Se

CC 72-2 (Electrochemistry)

- Section cross-reference(s): 52, 76
- ST tungsten selenide polycrystn semiconductor **electrode**;
photoelectrochem redox tungsten selenide; solar **energy**
conversion tungsten selenide
- IT Photoelectric emission
(from tungsten selenide **films**, polycryst. p-type)
- IT **Electrodes**
(photoelectrochem., **film**, tungsten selenide, polycryst.
p-type)
- IT **12067-46-8**
(**films** of polycryst. p-type, photoelectrochem. of)
- L56 ANSWER 13 OF 18 HCA COPYRIGHT 2003 ACS on STN
96:71834 **Electrochemical** solar **cells** with
layer-type semiconductor **anodes**: chemical
treatments of the crystal surface. Razzini, G.; Bicelli, L.
Peraldo; Pini, G.; Scrosati, B. (Ist. Elettrochim. Chim.-Fis.
Metall., Politech. Milan, Milan, Italy): Journal of the
Electrochemical Society, 128(10), 2134-7 (English) 1981.
CODEN: JESOAN. ISSN: 0013-4651.
- AB Photoelectrochem. cells based on **layer**-type semiconductors
(i.e., transition-metal sulfides and selenides) have gained
substantial interest due to their reasonably high solar efficiency
and good stability against photocorrosion. However, the performance
of this cell type may be limited by irregularities in the
semiconductor, since edges of the van der Waals surface exposed to
the electrolyte may act as recombination centers. To control this
effect, chem. surface treatments, based on specific agents which
perform selectively on the transition metal atoms at the edge sites,
were studied. In particular, the effect of the disodium salt of
EDTA (as well as that of many other org. mols.) on the performance
of an n-MoSe₂/I⁻, I₂/Pt sample cell was investigated. Treatment
with EDTA generally improved both short-circuit current and power
output, even if a considerable variation in the response from
crystal to crystal was obsd. The stability of the EDTA effect under
prolonged cell operation was also examd.
- IT **12058-18-3**
(**electrodes**, photoelectrochem. cells contg. chem.
surface-treated, performance of)
- RN 12058-18-3 HCA
- CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)
- Se=Mo=Se
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- IT **12058-18-3**
(**electrodes**, photoelectrochem. cells contg. chem.
surface-treated, performance of)
- IT 100-43-6 100-69-6 110-86-1, uses and miscellaneous 139-13-9
139-33-3 462-08-8 482-54-2 504-29-0 1122-58-3 1824-81-3
25014-15-7 25232-41-1

(photoelectrochem.-cell **electrodes** from molybdenum diselenide surface treated with, performance of)

L56 ANSWER 14 OF 18 HCA COPYRIGHT 2003 ACS on STN

95:190018 **Electrochemical solar cells** with

layer-type semiconductor anodes. Performance of n-molybdenum selenide (MoSe₂) cells. Razzini, G.; Lazzari, M.; Bicelli, L. Peraldo; Levy, F.; De Angelis, L.; Galluzzi, F.; Scafe, E.; Fornarini, L.; Scrosati, B. (Cent. Studio Processi Elettrodici, Polytech. Milan, Milan, Italy). Journal of Power Sources, 6(4), 371-82 (English) 1981. CODEN: JPSODZ. ISSN: 0378-7753.

AB The output characteristics and the long-term performances of n-MoSe₂ (I-,I₂) **electrochem. solar cells** were investigated. The surface state of the semiconductor plays a key role in the behavior of the cell. With smooth crystal samples, fill factor and efficiency values of 0.6 and 6%, resp., were obtained under air-mass-1 illumination. Such performances are, however, drastically reduced if irregular crystal samples are used. Control of these undesirable surface-state effects was attempted by chem. treatments specific to the unsatd. transition-metal atoms exposed to the electrolyte at the edge sites. The stability of n-MoSe₂ (I-,I₂) cells under long-time operation, was also evaluated.

IT 12058-18-3

(**anodes**, photoelectrochem. cells contg., long-term performance of)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se—Mo—Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 12058-18-3

(**anodes**, photoelectrochem. cells contg., long-term performance of)

L56 ANSWER 15 OF 18 HCA COPYRIGHT 2003 ACS on STN

95:177608 Thin **film** cadmium selenide **electrodes** for

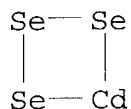
backwall photoelectrochemical cells. Russak, Michael A.; Reichman, Joseph (Res. Dep., Grumman Aerosp. Corp., Bethpage, NY, 11714, USA). Journal of the Electrochemical Society, 128(9), 2029-31 (English) 1981. CODEN: JESOAN. ISSN: 0013-4651.

AB These CdSe **electrodes** were deposited on SnO₂-

coated glass and have resistivity in the range of 10 .OMEGA./square and visible transmission of .apprx.80%. These **films** were deposited by simultaneous vacuum evapn. of Cd and Se onto chem.-spray-deposited, halogen-doped, SnO₂-**coated** glass slides. The irradiation of the CdSe was through the substrate glass and the transparent conductor. This **cell** eliminates the **electrolyte** absorption loss and allows reasonably quick sample change. Current-voltage curves are given and with a Se/Cd ratio of 3 with heat treatment in air at 400.degree. these

backwall **electrodes** gave power conversion efficiencies
>4%.

IT 79497-64-6
(**electrodes**, photoelectrochem.)
RN 79497-64-6 HCA
CN Cadmium selenide (CdSe₃) (9CI) (CA INDEX NAME)



IT 1306-24-7, uses and miscellaneous
(**electrodes**, thin-film, for backwall
photoelectrochem. cells)
RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)



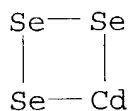
CC 72-7 (Electrochemistry)
Section cross-reference(s): 74, 76
ST cadmium selenide **electrode** stannic oxide; photoelectrochem
electrode cadmium selenium; **energy**
conversion solar elec
IT **Electrodes**
(photoelectrochem., **film**, cadmium selenide, for
backwall cells)
IT 79497-64-6
(**electrodes**, photoelectrochem.)
IT 1306-24-7, uses and miscellaneous
(**electrodes**, thin-film, for backwall
photoelectrochem. cells)

L56 ANSWER 16 OF 18 HCA COPYRIGHT 2003 ACS on STN
95:177607 Properties of cadmium selenide thin **film**
electrodes for photoelectrochemical cells. Reichman,
Joseph; Russak, Michael A. (Res. Dep., Grumman Aerosp. Corp.,
Bethpage, NY, 11714, USA). Journal of the Electrochemical Society,
128(9), 2025-9 (English) 1981. CODEN: JESOAN. ISSN:
0013-4651.

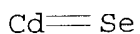
AB Recent efforts on establishing the relations among thin-film
processing parameters, electronic properties, and photoelectrochem.
performance of CdSe **films** are summarized. The
electrodes were deposited onto Ti sheet and were designed
for use in frontwall illuminated **electrochem.** photovoltaic
cells where the incoming radiation would pass through a
transparent window, a thin **layer** of electrolyte, and then
strike the semiconductor electrolyte junction. The most promising
results were obtained with CdSe **films** deposited at

.apprx.100.degree. with a Se/Cd ratio of 3 and then heat-treated in the temp. range of 350-400.degree. in air.

IT 79497-64-6
 (electrodes, photoelectrochem.)
 RN 79497-64-6 HCA
 CN Cadmium selenide (CdSe₃) (9CI) (CA INDEX NAME)



IT 1306-24-7, uses and miscellaneous
 (electrodes, thin-film, for photoelectrochem.
 cells)
 RN 1306-24-7 HCA
 CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)



CC 72-7 (Electrochemistry)
 Section cross-reference(s): 74, 76
 ST cadmium selenide **film electrode**
 photoelectrochem; charge transfer cadmium selenide **electrode**
 IT Electron exchange
 (on cadmium selenide thin-film **electrodes**, in
 photoelectrochem. cells)
 IT **Electrodes**
 (photoelectrochem., **film**, cadmium selenide)
 IT 79497-64-6
 (electrodes, photoelectrochem.)
 IT 1306-24-7, uses and miscellaneous
 (electrodes, thin-film, for photoelectrochem.
 cells)

L56 ANSWER 17 OF 18 HCA COPYRIGHT 2003 ACS on STN
 95:153806 **Electrochemical** photovoltaic **cells** cadmium
 selenide thin **film electrodes**. Russak, M. A.;
 Reichman, J.; DeCarlo, J.; Creter, C. (Res. Dep., Grumman Aerosp.
 Corp., Bethpage, NY, USA). Report, SERI-TR-8002-8-T1, 63 pp.
 Avail. NTIS From: Energy Res. Abstr. 1981, 6(11), Abstr. No. 15465
 (English) 1980.

AB Progress on developing stable, thin-film CdSe
electrodes with sunlight conversion efficiency of 10% for
 use with aq. polysulfide electrolytes in frontwall and backwall
 illuminated **electrochem. photovoltaic cells** is
 reported. The relation among thin-film processing,
 resultant electronic properties, and current-voltage (I-V)
 performance was studied to produce **electrodes** with max.
 power conversion efficiency. The best results were obtained with

CdSe thin-film **electrodes** produced in 2 ways for frontwall cells. **Films** were deposited on Ti at .apprx.100.degree. with a high Se/Cd ratio and then heat treated in air at 350-400.degree.. These **films** usually have a very fine grained microstructure after heat treatment and the resultant **electrodes** exhibit fairly square I-V characteristics, with fill factors of .gtoreq.0.6 and high current output. The overall power efficiency of these **electrodes** is limited by relatively low output voltages. At present, power conversion efficiencies of 3-5% can be obtained reproducibly at simulated air-mass-2 conditions with **electrodes** processed in this manner. The 2nd type of **film** that yielded promising results was deposited on Ti at substrate temp. of >400.degree.. These **electrodes** have increased open-circuit voltage. However, the current output and fill factor are lower. As a result, the power conversion efficiency of these **electrodes** is 3 to 4%. Backwall **electrodes** with an efficiency of >4% and short-circuit densities near theor. for air-mass-2 conditions were produced.

IT 1306-24-7, uses and miscellaneous
 (**electrodes**, photoelectrochem. cells contg. aq.
 polysulfide electrolyte and, development and properties of)
 RN 1306-24-7 HCA
 CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST cadmium selenide **electrode** photoelectrochem cell
 IT **Electrodes**
 (photoelectrochem., cadmium selenide, development and properties
 of)
 IT 1306-24-7, uses and miscellaneous
 (**electrodes**, photoelectrochem. cells contg. aq.
 polysulfide electrolyte and, development and properties of)

L56 ANSWER 18 OF 18 HCA COPYRIGHT 2003 ACS on STN

92:96735 **Electrochemical** photovoltaic **cells**
 utilizing thin **film** semiconductor **electrodes**.
 Russak, M. A.; Reichman, J.; Witzke, H.; Deb, S. K.; Chen, S. N.
 (Res. Dep., Grumman Aerosp. Corp., Bethpage, NY, 11714, USA). Comm.
 Eur. Communities, [Rep.] EUR, EUR 6376, Photovoltaic Sol. Energy
 Conf., 690-700 (English) 1979. CODEN: CECED9.

AB The fabrication and evaluation of thin-film CdSe
electrodes for use in the title cells is described. The
 effect of **electrode** prepn. and electrolyte concn. on
 efficiency and stability are presented. Current-voltage curves and
 action spectra are also discussed, and a relation between efficiency
 and minority carrier diffusion length is shown. Conversion
 efficiencies as high as 5% are reported.

IT 1306-24-7P, uses and miscellaneous

(**electrodes**, photoelectrochem.-cell, prepn. and
properties of thin-film)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST photoelectrochem solar cell **electrode**; selenide cadmium

electrode photoelectrochem cell

IT **Electrodes**

(photoelectrochem.-cell, cadmium selenide, prepn. and properties
of thin-film)

IT Electric current carriers

(minority, diffusion length of, efficiency of cadmium selenide
photoelectrochem. cell **electrodes** in relation to)

IT 1306-24-7P, uses and miscellaneous

(**electrodes**, photoelectrochem.-cell, prepn. and
properties of thin-film)

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L57 ANSWER 1 OF 8 HCA COPYRIGHT 2003 ACS on STN

127:284789 Thermal spray deposited **electrode** component and
method of manufacture. Muffoletto, Barry C.; Paulot, William M.;
Spaulding, Joseph E. (Wilson Greatbatch Ltd., USA). PCT Int. Appl.
WO 9736023 A1 19971002, 42 pp. DESIGNATED STATES: W: AU,
JP; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1996-US17558
19961030. PRIORITY: US 1996-621257 19960325.

AB An **electrode** component for an **electrochem.**

cell is described wherein the **electrode** is
produced by thermal spraying an **electrode** active material
onto a substrate to coat the substrate. Suitable thermal spraying
processes include chem. combustion spraying and elec. heating
spraying, using both wire and power processes.

IT 12039-13-3, Titanium disulfide

(**cathode** active material; **electrochem.**
cell with **cathode** coated with)

RN 12039-13-3 HCA

CN Titanium sulfide (TiS₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S=Ti=S

IC ICM C25B009-00

ICS C25B011-04; C25B011-10; C23C004-10; H01M006-04; H01M006-14;
H01M006-00; B23P019-00

CC 72-2 (Electrochemistry)

ST thermal spray deposited **electrode** component;

electrolytic cell electrode

- IT Alkali metals, uses
(**electrochem. cell with anode from**)
- IT **Electrolytic cells**
(**electrode for**)
- IT **Electrodes**
(thermal spray deposited **electrode** component and method of manuf.)
- IT **Coating process**
(thermal spraying; thermal spray deposited **electrode** component and method of manuf.)
- IT 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide, uses 1344-70-3, Copper oxide 7440-44-0, Carbon, uses 7440-44-0D, Carbon, fluorinated, uses 11104-61-3, Cobalt oxide 11115-78-9, Copper sulfide 11118-57-3, Chromium oxide 11126-12-8, Iron sulfide 12039-13-3, Titanium disulfide 181183-66-4, Copper silver vanadium oxide
(**cathode active material; electrochem. cell with cathode coated with**)
- IT 7439-93-2, Lithium, uses
(**electrochem. cell with anode from**)
- IT 16919-18-9D, Hexafluorophosphate, alkali metal salt 16973-45-8D, Hexafluoroarsenate, alkali metal salt
(**electrochem. cell with electrolyte from**)
- IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Dimethyl formamide, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-49-1, Ethylene carbonate 109-99-9, Tetrahydrofuran, uses 111-96-6, Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide
(**electrochem. cell with electrolyte in solvent from**)
- IT 108-32-7, Propylene carbonate 110-71-4
(**electrochem. cell with electrolyte in solvent from mixt. of dimethoxyethane and propylene carbonate**)
- IT 7429-90-5, Aluminum, uses 7440-32-6, Titanium, uses
(**electrode substrate; silver vanadium oxide-coated electrode substrate for electrochem. cell**)
- IT 11105-02-5, Silver vanadium oxide
(silver vanadium oxide-coated **electrode for electrochem. cell**)

L57 ANSWER 2 OF 8 HCA COPYRIGHT 2003 ACS on STN

127:114512 Durable **electrode** coatings. Tsou, Yu-min (Dow Chemical Co., USA). U.S. US 5645930 A 19970708, 15 pp. (English). CODEN: USXXAM. APPLICATION: US 1995-513581 19950811.

AB Durable **electrolytic cell electrodes**

having low hydrogen overpotential and performance stability are presented. A highly porous electrocatalytic primary phase and an outer, secondary phase reinforcement coating are provided on an elec. conducting transition metal substrate to make the

electrodes. Durability is achieved by the application of the outer secondary phase to protect the primary phase electrocatalytically active coating. A process is also disclosed for catalyzing a substrate surface to promote electroless deposition of a metal.

IT 11113-75-0, Nickel sulfide
(plating of nickel sulfide on polycarbonate in manufg. durable **electrode**)

RN 11113-75-0 HCA

CN Nickel sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	x	7704-34-9
Ni	x	7440-02-0

IC ICM B32B005-16

ICS C25B011-04

NCL 428328000

CC 72-2 (Electrochemistry)

ST **electrolytic cell electrodes** low
hydrogen overpotential

IT **Coating materials**
(durable **electrode** coatings)

IT Brines
(durable **electrode** coatings for electrolysis of)

IT Overvoltage
(durable **electrode** coatings with low hydrogen
overpotential and performance stability)

IT **Electrodes**
(**electrolytic cell electrodes**
having low hydrogen overpotential and performance stability)

IT Polycarbonates, uses
(substrate; plating of nickel phosphide on polycarbonate in
manufg. durable **electrode**)

IT 7440-50-8, Copper, uses
(durable **electrode** coatings prepd. by dipping copper
wire screen in coating solns.)

IT 7439-89-6, Iron, uses
(durable **electrode** coatings prepd. by dipping iron wire
screen in coating solns.)

IT 11129-89-8, Platinum oxide
(durable **electrode** coatings prepd. by dipping metal
wire screen in soln. contg.)

IT 7647-01-0, Hydrochloric acid, uses 7647-10-1, Palladium dichloride
7718-54-9, Nickel dichloride, uses 9060-90-6, Poly(aminostyrene)
10049-08-8, Ruthenium trichloride 10139-58-9, Rhodium nitrate
11113-77-2, Palladium oxide 12036-10-1, Ruthenium dioxide
12645-46-4, Iridium oxide 12648-47-4, Platinum chloride
12680-36-3, Rhodium oxide 25014-15-7, Poly(2-vinylpyridine)
25014-41-9, Poly(acrylonitrile) 25067-59-8, Poly(vinylcarbazole)

- 25067-61-2, Poly(methacrylonitrile) 25232-41-1,
 Poly(4-vinylpyridine) 30551-89-4, Poly(allylamine) 55917-50-5,
 Palladium phosphate 61970-39-6, Osmium oxide
 (durable **electrode** coatings prepd. by dipping nickel
 wire screen in soln. contg.)
- IT 7440-22-4, Silver, uses
 (durable **electrode** coatings prepd. by dipping silver
 wire screen in coating solns.)
- IT 12597-68-1, Stainless steel, uses
 (durable **electrode** coatings prepd. by dipping stainless
 steel wire screen in coating solns.)
- IT 1333-74-0, Hydrogen, properties
 (durable **electrode** coatings with low hydrogen
 overpotential and performance stability)
- IT 7440-02-0, Nickel, uses
 (**electrode**; durable **electrode** coatings prepd.
 by dipping nickel wire screen in coating solns.)
- IT 12619-68-0, Cobalt boride
 (plating of Co boride on polycarbonate in manufg. durable
electrode)
- IT 7440-48-4, Cobalt, properties
 (plating of Co on polycarbonate in manufg. durable
electrode)
- IT 12643-12-8, Cobalt phosphide
 (plating of Co/P alloy on polycarbonate in manufg. durable
electrode)
- IT 12619-90-8, Nickel boride
 (plating of nickel boride on polycarbonate in manufg. durable
electrode)
- IT 11104-08-8, Nickel phosphide
 (plating of nickel phosphide on polycarbonate in manufg. durable
electrode)
- IT 11113-75-0, Nickel sulfide
 (plating of nickel sulfide on polycarbonate in manufg. durable
electrode)

L57 ANSWER 3 OF 8 HCA COPYRIGHT 2003 ACS on STN

106:199242 **Cathodes**. Kanebori, Keiichi; Kirino, Fumiyoshi;
 Hiratani, Masahiko; Ito, Yukio; Miyauchi, Katsumi; Kudo, Tetsuichi
 (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61256563 A2
 19861114 Showa, 4 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1985-97761 19850510.

- AB Conductive and heat-resistant macromol. coatings are formed between
 the substrate and metal chalcogenide active material in
battery cathodes. Polyimide resin soln. contg.
 dispersions of Ni, Ti, W, and graphite was spin-coated on a
 stainless steel substrate and heated at 200 and 350.degree. to give
 an .apprx.10-.mu. coating. Thin TiS₂ film was formed on the coating
 by plasma chem. vapor deposition from TiCl₄ and H₂S. The resistance
 between the substrate and TiS₂ was .ltoreq.100.OMEGA. vs. .gtoreq.10
 M.OMEGA. for **cathode** without the polyimide interlayer.
- IT 12039-13-3, Titanium disulfide

(**cathodes** with stainless steel grids coated with metal-contg. polyimides, for **batteries**)

RN 12039-13-3 HCA
CN Titanium sulfide (TiS₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S==Ti==S

- IC ICM H01M004-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35, 38
ST **cathode battery** polyimide metal coating; sulfide titanium **cathode** polyimide; nickel polyimide coating **battery cathode**; titanium polyimide coating **battery cathode**; tungsten polyimide coating **battery cathode**; graphite polyimide coating **battery cathode**; elec resistance polyimide coating **cathode**
IT **Coating materials**
(polyimides, contg. metals, for stainless steel grids, for titanium sulfide **battery cathodes**)
IT **Cathodes**
(**battery**, titanium sulfide, with stainless steel grids coated with metal-contg. polyimides)
IT 12039-13-3, Titanium disulfide
(**cathodes** with stainless steel grids coated with metal-contg. polyimides, for **batteries**)
IT 12597-68-1
(coating materials, polyimides, contg. metals, for stainless steel grids, for titanium sulfide **battery cathodes**)
IT 7440-02-0, Nickel, uses and miscellaneous 7440-32-6, Titanium, uses and miscellaneous 7440-33-7, Tungsten, uses and miscellaneous 7782-42-5, Graphite, uses and miscellaneous
(in polyimide films, on stainless steel grids, for titanium sulfide **battery cathodes**)
- L57 ANSWER 4 OF 8 HCA COPYRIGHT 2003 ACS on STN
91:184061 **Cathode** for brine electrolysis. Kajiyama, Yoshihisa; Murakami, Yoshio; Matsuura, Shunji (Tokuyama Soda Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 54087680 19790712 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1977-155628 19771226.
- AB In prep. a **cathode** for an **electrolysis cell** by sinter coating an Fe base material with a **cathode**-active material, the Fe base material is pretreated in a soln. contg. .gtoreq.1 phosphates selected from Mn phosphates, Zn phosphates, or Fe phosphates. The **cathode** has a lower H overvoltage compared to a conventionally prepd. **electrode** without this pretreatment. Thus, a 10 x 30 mm steel sheet (5541) was polished with emery paper, rinsed, dipped in 10% HCl, dipped for 10 min in a 60.degree. bath contg. H3PO4 60, Zn3(PO4)2.4H2O 10,

NaH₂PO₄·2H₂O 10 g, and H₂O 3%, coated with a suspension contg. Na(SCN)₂ 40, Me cellulose 1.5, poly(ethylene glycol) 1.5, and H₂O 30 parts, then heated for 1 h at 900.degree. in an inert atm., the final coating and heating operation being repeated 4 times.

IT 12030-51-2 16812-54-7
(in coating, sinter, of phosphate treated steel **cathodes**)

RN 12030-51-2 HCA

CN Iridium sulfide (IrS₂) (7CI, 9CI) (CA INDEX NAME)

S=Ir=S

RN 16812-54-7 HCA

CN Nickel sulfide (NiS) (8CI, 9CI) (CA INDEX NAME)

Ni=S

IC C25B011-04

CC 72-10 (Electrochemistry)

ST **cathode** steel phosphating sinter coating; nickel sinter coating steel **cathode**

IT Brines

(electrolysis of, **cathodes** for)

IT **Cathodes**

(steel, phosphating and sinter coating of)

IT **Coating process**

(sintering, of phosphated steel **cathodes**)

IT 12597-69-2, uses and miscellaneous

(**cathodes**, phosphating and sinter coating of)

IT 6010-09-9 10026-00-3 12030-51-2 13465-52-6

13689-92-4 16812-54-7 57229-17-1

(in coating, sinter, of phosphate treated steel **cathodes**)

L57 ANSWER 5 OF 8 HCA COPYRIGHT 2003 ACS on STN

80:33330 **Electrode**. Chisholm, Raymond S. (Nora International Co.). U.S. US 3770613 19731106, 6 pp. Division of U.S.

3,649,485 (CA 76;135112c). (English). CODEN: USXXAM. APPLICATION: US 1971-104454 19710106.

AB The **electrodes** have a coating applied to an electroconductive base. The coating consists of the sulfides, nitrides, borides and carbides of Al, Ta, Ti, Bi, W, Zr, and Hf mixed with the metals, oxides, sulfides, nitrides, borides and carbides of Au, Ag, Pt, Pd, Ru, Rh, Ir, Os, Ni, Cr, Pb, Cu and Mn. The use of the novel **electrodes** in alkali metal-Cl cells, both diaphragm and Hg type, alkali metal chlorate cells and other similar electrolytic applications is discussed. A coating compn. is prepd. by mixing toluene soln. of Pt resinate (7.5 wt. % Pt) 3.75, Ti sulfide 1, and toluene 4 g. The Ti sulfide is thoroughly mixed in the toluene-resinate mixt., and the resulting mixt. is painted on

a Ti strip which is, prior to painting, pickled in HCl soln. The painted surface is heated in air to 450.degree. for 1 hr. The procedure is repeated 5 times to provide a tightly bonded coating of Ti sulfide-Pt to the Ti base.

IT 12038-21-0 12673-92-6
 (coating with, of graphite and titanium **electrodes**, for
 brine electrolysis)
 RN 12038-21-0 HCA
 CN Platinum sulfide (PtS₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S==Pt==S

RN 12673-92-6 HCA
 CN Titanium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	x	7704-34-9
Ti	x	7440-32-6

IC B01K
 NCL 204290000R
 CC 77-10 (Electrochemistry)
 ST **electrode electrolytic cell** chlorine
 chlorate; alkali metal chlorate cell **electrode**; coating
 titanium base **electrode**
 IT Brines
 (electrolysis of, coating of graphite and titanium
electrodes for)
 IT **Electrodes**
 (for brine electrolysis, coating of graphite and titanium)
 IT Chlorates
 (manuf. of, coating of graphite and titanium **electrodes**
 for)
 IT **Coating process**
 (of graphite and titanium **electrodes**, for brine
 electrolysis)
 IT 11113-84-1 12038-21-0 12070-08-5 12673-91-5
 12673-92-6
 (coating with, of graphite and titanium **electrodes**, for
 brine electrolysis)
 IT 7440-32-6, uses and miscellaneous 7782-42-5, uses and
 miscellaneous
 (**electrodes**, coating of, for brine electrolysis)

L57 ANSWER 6 OF 8 HCA COPYRIGHT 2003 ACS on STN
 78:143211 Flexible **battery cathode**. Hovspian,
 Boghos Karnig (du Pont de Nemours, E. I., and Co.). Ger. Offen. DE
 2243207 19730308, 20 pp. (German). CODEN: GWXXBX.
 APPLICATION: DE 1972-2243207 19720901.

AB Flexible **cathodes** for **primary cells**
 were made by coating slurried sulfides of Fe, Pb, Cd, Cu, or Ni, or
 oxides of Cu or Fe on 127-203 .mu. thick Pb or Al foils and
 cold-pressing at 1410-2810 kg/cm². Thus, FeS prepd. by sintering
 1:1 Fe-S mixts. at 450.degree. was sieved, slurried in Cl₂FCCF₂Cl,
 spread on a 127 .mu. thick Al foil, and pressed 2 min at 2810 kg/cm²
 to give a well adhering coating. A cell made from the coated
cathode sheet discharged within 5 min at 125 mA and 1.0 V.

IT 1317-37-9
 (coating with, on aluminum or lead foil **cathodes**)

RN 1317-37-9 HCA

CN Iron sulfide (FeS) (8CI, 9CI) (CA INDEX NAME)

Fe=S

IT 1317-40-4
 (coating with, on lead foil **cathodes**)

RN 1317-40-4 HCA

CN Copper sulfide (CuS) (8CI, 9CI) (CA INDEX NAME)

Cu=S

IT 16812-54-7
 (coating with, on lead foil **cathodes**)

RN 16812-54-7 HCA

CN Nickel sulfide (NiS) (8CI, 9CI) (CA INDEX NAME)

Ni=S

IC H01M

CC 77-2 (Electrochemistry)

ST lead **cathode battery**; aluminum **cathode**
 ; iron sulfide coating **cathode**; cadmium sulfide coating
cathode; copper sulfide coating **cathode**; nickel
 sulfide coating **cathode**; oxide copper coating
cathode

IT **Cathodes**
 (battery, aluminum or lead, oxide- or sulfide-coated
 foils)

IT **Coating process**
 (of aluminum or lead foil **cathodes**, with oxides or
 sulfides)

IT 7429-90-5, uses and miscellaneous 7439-92-1, uses and
 miscellaneous
 (**cathodes**, coating of, with sulfides)

IT 1317-37-9
 (coating with, on aluminum or lead foil **cathodes**)

IT 1306-23-6, uses and miscellaneous 1309-37-1, uses and
 miscellaneous 1314-87-0 1317-38-0, uses and miscellaneous

1317-39-1, uses and miscellaneous 1317-40-4
(coating with, on lead foil **cathodes**)

IT 16812-54-7
(coating with, on lead foil **cathodes**)

L57 ANSWER 7 OF 8 HCA COPYRIGHT 2003 ACS on STN
78:105397 Coating of metal halides and oxides with metal sulfides for
cathodes. Braun, Leon (Molecular Energy Corp.). Ger.
Offen. DE 2135583 19730201, 8 pp. (German). CODEN:
GWXXBX. APPLICATION: DE 1971-2135583 19710716.

AB Cu, Ni, Ag, and Pb halide or oxide particles were coated with Cu,
Ni, Ag, and Pb sulfides, resp., by pptn. from a soln. or by
spraying. The coated particles were used for **battery**
cathodes low in content of material producing no energy.
Thus, 50 g Na₂S in 1500 ml EtOH was added to a suspension of 500 g
Cu fluoride particles (50-100 mesh) in 1000 ml MeOH to give a Cu
sulfide coating. The coated particles were mixed with 3% poly(vinyl
chloride) and compacted at .apprx.149.degree. to give a
self-supporting elec. conducting **cathode** of high c.d.

IT 11113-75-0
(coating with, on nickel fluoride, for **cathodes**)

RN 11113-75-0 HCA
CN Nickel sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	x	7704-34-9
Ni	x	7440-02-0

IT 12751-47-2
(coating with, on silver chloride, for **cathodes**)

RN 12751-47-2 HCA
CN Silver sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	x	7704-34-9
Ag	x	7440-22-4

IC H01M

CC 77-2 (Electrochemistry)

Section cross-reference(s): 71

ST coating metal halide sulfide; copper fluoride sulfide coating;
nickel fluoride sulfide coating; silver chloride sulfide coating;
lead oxide sulfide coating; **cathode battery**
metal sulfide

IT **Cathodes**
(**battery**, metal halides and oxides, coated with
sulfides)

IT **Coating process**

(of metal halides and oxides, with sulfides, for **battery cathodes**)

- IT 11113-59-0
(coating of, with copper sulfide, for **cathodes**)
- IT 1309-60-0
(coating of, with lead sulfide, for **cathodes**)
- IT 10028-18-9
(coating of, with nickel sulfide, for **cathodes**)
- IT 7783-90-6
(coating of, with silver sulfide, for **cathodes**)
- IT 11115-78-9
(coating with, on copper fluoride, for **cathodes**)
- IT 1314-87-0
(coating with, on lead dioxide, for **cathodes**)
- IT 11113-75-0
(coating with, on nickel fluoride, for **cathodes**)
- IT 12751-47-2
(coating with, on silver chloride, for **cathodes**)

L57 ANSWER 8 OF 8 HCA COPYRIGHT 2003 ACS on STN

76:135112 Electrolysis of brine using coated carbon **anodes**.
Chisholm, Raymond S. (PPG Industries, Inc.). U.S. US 3649485
19720314, 4 pp. (English). CODEN: USXXAM. APPLICATION: US
1968-764618 19681002.

AB Coatings of sulfides, nitrides, borides and carbides of Al, Ta, Ti, Bi, W, Zr, and Hf mixed with the metals, oxides, sulfides, nitrides, borides, and carbides of Au, Ag, Pt, Pd, Ru, Rh, Ir, Os, Ni, Cr, Pb, Cu, and Mn are described. For example, a soln. of 3.75 g Pt resinate (7.5 wt. Pt), 1 g Ti sulfide and 4 g toluene was painted onto a Ti strip which was pickled in HCl soln. prior to painting. The painted surface was heated in air to 450.degree. for 1 hr. This process was repeated 5 times to yield a tightly bonded coating of Ti sulfide-Pt on the Ti base. C **electrodes** coated in this manner are used in cells for prodn. of alkali metal-Cl (both diaphragm and Hg-type) and alkali metal-Na chlorate by electrolysis of alkali metal chlorides.

IT **12038-21-0 12673-92-6**
(coating with, of carbon and titanium **anodes**, for brine electrolysis)

RN 12038-21-0 HCA

CN Platinum sulfide (PtS₂) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 12673-92-6 HCA

CN Titanium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	x	7704-34-9

Ti | x | 7440-32-6

IC C01B; B01K

NCL 204095000

CC 77 (Electrochemistry)

Section cross-reference(s): 49

ST electrolysis brine coated carbon **anode**; **electrode**
coating electrolysis brine; chlorine prodn electrolytic cell; alkali
metal prodn **electrolytic cell**; chlorate prodn
electrolytic cell

IT Brines

(electrolysis of, coated carbon **anodes** for)

IT **Anodes**

(for brine electrolysis, coated carbon)

IT **Coating process**

(of carbon and titanium **anodes**, for brine electrolysis)

IT 7440-32-6, uses and miscellaneous 7440-44-0, uses and
miscellaneous

(**anodes**, coated, for brine electrolysis)

IT 7440-06-4, uses and miscellaneous

(coating with, of carbon and titanium **anodes**, for brine
electrolysis)

IT 11113-84-1 12038-21-0 12070-08-5 12673-91-5

12673-92-6

(coating with, of carbon and titanium **anodes**, for brine
electrolysis)